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CLUSTERS OF TASKS PERFORMED BY WASHINGTON STATE FARM OPERATORS ENGAGED IN SEVEN TYPES OF AGRICULTURAL PRODUCTION--GRAIN, DAIRY, FORESTRY, LIVESTOCK, POULTRY, HORTICULTURE, AND GENERAL FARMING. REPORT NO. 27.

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THE OBJECTIVE OF THIS STUDY WAS TO OBTAIN UP-TO-DATE FACTS ABOUT CLUSTERS OF TASKS PERFORMED BY WASHINGTON STATE FARM OPERATORS ENGAGED PRIMARILY IN PRODUCING GRAIN, LIVESTOCK, DAIRY COMMODITIES, POULTRY, FOREST PRODUCTS, HORTICULTURAL COMMODITIES, AND GENERAL FARMING COMMODITIES. FROM A RANDOM SAMPLE OF 267 FARMERS REPRESENTING THOSE CATEGORIES 178 RETURNED USEABLE QUESTIONNAIRES DESIGNED TO DETERMINE PERFORMANCE OF TASKS CLASSIFIED AS ANIMAL CARE, PLANT PRODUCTION, LAND MANAGEMENT, HARVESTING AND PROCESSING, GENERAL MANAGEMENT, MARKETING, EQUIPMENT USE AND CARE, AND BUILDING MAINTENANCE AND CONSTRUCTION. DATA COLLECTED WERE SUMMARIZED BY PRODUCTION AREA. RESULTS SHOWED THAT TASKS CLASSIFIED AS MANAGEMENT, MARKETING, ANIMAL CARE, AND PLANT PRODUCTION ARE PERFORMED BY LARGE PERCENTAGES OF MOST CATEGORIES OF FARM OPERATORS. THE NEED FOR BROAD HIGH SCHOOL PROGRAMS TO ENCOMPASS THE BREADTH AND COMPLEXITY OF AGRICULTURAL PRODUCTION AND AGRI-BUSINESSES. A BIBLIOGRAPHY AND THE QUESTIONNAIRE ARE INCLUDED. (DM)

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Grain
Dairy
Forestry
Livestock
Poultry
Horticulture
General Farming

June 1968

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Gilbert A. Long

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SUMMARY

The objective of this study was to obtain up-to-date facts about clusters of tasks performed by Washington State farm operators engaged primarily in production of (1) grain, (2) livestock, (3) dairy commodities, (4) poultry, (5) forest products, (6) horticultural commodities, and (7) general farming. Populations representing those categories were identified. A random sample of 267 farmers was drawn. A questionnaire was designed to ascertain farmer's performance of tasks classified as (1) animal care, (2) plant production, (3) land management, (4) harvesting and processing, (5) general management, (6) marketing, (7) equipment use and care, and (8) building maintenance and construction. It was distributed by mail and 178 usable questionnaires were returned. Results show that tasks classified as management, marketing, animal care, plant production are performed by large percentages of all categories of farm operators.

INTRODUCTION

Rapid changes in the nature of agricultural production have been documented by The Farm Index[1] which notes that output per man-hour has more than doubled in the past 15 years.

These productivity advances are due largely to wider use of power equipment along with improved plant breeding, insecticides and fertilizers.[2]

Constantly changing methods of production are modifying the nature of agriculture work and the types of knowledge and capabilities farm operators and employees need to work effectively.

Purpose

To keep agricultural education up-to-date it is essential that teachers have up-to-date information about the types of work actually performed by workers engaged in production and about the types of knowledge and capabilities required for effective work.

The purpose of this study is to provide facts about the major types of tasks actually performed by proprietors and employees presently engaged in production of commodities commonly classified as grain, livestock, dairy, poultry, forestry, horticulture and general farming in the state of Washington.

Procedure

Tasks performed in the above categories of agricultural production were selected for study because they constitute major percentages of all commodities produced by Washington farmers.

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[1]"Fertilizer, More Efficient Use of Labor Bring Near Record Total Farm Output," The Farm Index, VI (August, 1967), p. 9.

[2]Harold K. Wilson and Will M. Myers, Field Crop Production (New York: J.B. Lippincott Company, 1954).

Questionnaire Development and Testing

A questionnaire was designed to ascertain the facts about major types of tasks actually performed by farm operators engaged in above fields of agricultural production. An operator was defined as a person primarily responsible for management of a farm.

To optimize the current relevance of data, respondents were asked to indicate tasks they or their employees had performed within the past two years. Agricultural scientists and agricultural education specialists served as consultants in development of the questionnaire. The questionnaire was field tested and revised. The final version of the questionnaire contained 132 items. Items were classified as pertaining to: animal care, plant production, land management, general management, harvesting and processing, marketing, use and care of equipment, and maintenance and construction of buildings.

The questionnaire was mailed to a sample of 20 farm operators who completed it. It was also used as a basis for interviews with 20 other farmers. There was no significant difference in results obtained by the two methods. Consequently, data reported below was obtained by mailed questionnaires.

A copy of the questionnaire is shown in APPENDIX A.

Population and Sample

A population of farmers engaged primarily in each category of agricultural production was identified by representatives of the Soil Conservation Service, Cooperative Extension Service, and the Agricultural Stabilization and Conservation Service.

A "general farming" category was identified because many farmers are engaged in production of more than one category of commodity.

Table 1 is based on the classifications assigned to the individual farmers by the Work Unit Conservationists of the Soil Conservation Service, the County Extension Agents of the Cooperative Extension Service, and the Office Managers of the Agricultural Stabilization and Conservation Service.

Table 1

SIZES OF POPULATION SAMPLES BY
COMMODITY PRODUCTION CATEGORIES

Commodity Group	Number of Farmers in Defined Population
Grain	60
Livestock	69
Dairy	40
Poultry	7
Forest Products	12
Horticultural Products	61
General Farming	18
TOTAL	267

Table 2 is based on classifications assigned by the author through analysis of responses recorded in returned questionnaires.

A total of 267 questionnaires were mailed to all farm operators included in the above sample. Table 2 shows the categories in which a total of 178 questionnaires were returned. That was 67 per cent of those mailed. All respondents were male except one female employed in the horticulture area.

Table 2

NUMBER OF QUESTIONNAIRES RETURNED BY RESPONDENTS IN EACH PRODUCTION CATEGORY

Grain	29
Livestock	59
Dairy	22
Poultry	6
Forest Products	5
Horticultural Products	45
General Farming	12
TOTAL	178

FINDINGS

Table 3 lists in rank order per cents of all categories of respondents who perform tasks included on the questionnaire. By examination of the Table, instructors can easily ascertain which tasks are performed by various percentages of all respondents. These data indicate a partial basis on which instructors make decisions about the overall structure of agricultural curricula.

Table 3

NUMBER AND PER CENTS OF ALL PRODUCER CATEGORIES PERFORMING TASKS (In rank order of per cents)

9 - Operate Tractors	96.06
8 - Supervise Farm Labor	95.52
2 - Operate Trucks	94.94
4 - Plan Farm Work Schedules	94.38
5 - Hire Farm Labor	93.82
1 - Harvest Farm Products	93.25
7 - Keep Farm Accounts	92.69
10 - Operate, Maintain, and Repair Tillage Equipment	92.69
6 - Negotiate Purchase of Equipment	91.57
11 - Fetorlize Crops, Lawns, Shrubs, or Trees	91.01
12 - Identify and Control Weeds	91.01
3 - Order Supplies and Parts	90.44
19 - Maintain and Sharpen Tools	90.44
25 - Sell Farm Products	87.64
24 - Plan Land Use	86.51
34 - Select Build Materials	86.51
16 - Sell Farm Commodities or Supplies	85.95
38 - Maintain and Repair Tractors, Tractor Engines	84.83
26 - Interpret Market Reports	82.58
39 - Operate, Maintain and Repair Cultivation Equipment	82.02
33 - Maintain and Repair Shop Machinery and Equipment	80.89
40 - Maintain a Farm Business Inventory	80.89
15 - Transport Farm Products	79.77
21 - Operate, Maintain and Repair Planting Equipment	79.77
43 - Plan Schedules of Production	79.21
28 - Decide upon Market Alternatives	78.65
35 - Plan and Conduct Conservation Programs	78.08
41 - Layout, Cut, Fit, Thread Pipe, Install Plumbing System	77.52

45 - Sample Soils	76.96
54 - Control Rodents	75.84
37 - Maintain and Repair Trucks, Truck Engines	75.84
31 - Prepare Seed Beds	75.28
66 - Plan Farm Budgets	74.71
46 - Maintain and Repair Internal Combustion Engines	74.71
59 - Identify and Control Insects	74.15
62 - Finish and Paint Exterior and Interior of Building	74.15
47 - Operate, Maintain and Repair Fertilizer Equipment	73.59
32 - Layout, Cut, Drill, Machine Braze, Weld Metal	73.03
74 - Plan Farm Insurance Programs	70.78
55 - Organize Farm Enterprises	70.76
49 - Store Farm Products	69.66
58 - Irrigate Crops, Lawns, Trees and Shrubs	69.66
61 - Frame, Sheath Roof Buildings	68.53
71 - Estimate Costs of Building Repairs or Construction	67.97
75 - Maintain and Repair Hydralic Systems	67.41
50 - Buy Farm Commodities	66.85
13 - Care for Livestock or Poultry	66.85
63 - Mix, Pour, Finish and Cure Concrete	66.85
73 - Prepare Farm Income Tax Returns	65.73
17 - Pasture Livestock	65.73
14 - Feed Livestock or Poultry	65.16
29 - Sell Livestock or Poultry Products	65.16
30 - Identify, Prevent, and Control Livestock and Poultry Diseases	64.60
18 - Operate, Maintain and Repair Livestock or Poultry Production Facilities and Equipment	64.04
67 - Build Concrete Forms	64.04
80 - Analyze Farm Accounts	64.04
20 - Maintain or Repair Livestock or Poultry Housing Facilities	63.48
81 - Diagnose and Control Diseases	62.35
27 - Select Homegrown Feed	62.35
77 - Cultivate and Mulch Crops	61.79
60 - Operate, Maintain and Repair Storage Equipment	61.79
22 - Buy Feed	61.23
36 - Identify, Prevent and Control Livestock and Poultry Parasite	60.11
78 - Prepare Farm Products for Sale	59.55
23 - Store Feed	59.55
56 - Operate, Maintain and Repair Forage, Harvest Equipment	57.86
42 - Operate, Maintain and Repair Grain, Combine Harvesters	55.05
76 - Wire and Install Electrical Fixtures and Appliances	53.93
86 - Negotiate Production Credit	52.80
79 - Measure and Weigh Farm Products	51.68
44 - Care for Animals During Gestation and Parturition	51.12
52 - Identify Livestock and Poultry	50.56
57 - Recognize Nutrient Deficiency	50.00
85 - Write a Will	49.44
53 - Keep and Use Management Records	48.87
51 - Balance Rations	48.87
82 - Negotiate Leases	47.75

83 - Identify Economic Plants and Seeds	47.19
48 - Select Livestock or Poultry for Breeding Programs	46.62
87 - Negotiate Purchase of Land	46.62
89 - Select Seed or Nursery Stock	46.62
92 - Maintain and Repair Electric Motors	46.62
72 - Select Livestock or Poultry for Production Programs	44.94
93 - Diagnose Pesticide Injury	44.94
90 - Install Irrigation Systems	44.38
95 - Select Plant Varieties	44.38
100 - Drain Soils	42.69
70 - Transport and Store Livestock or Poultry Products	42.13
91 - Mix Mortar, Lay Bricks and Blocks	41.57
99 - Negotiate Farm Mortgages	41.57
65 - Mix Feed	40.44
68 - Conduct Breeding Programs	40.44
84 - Layout, Cut, Punch, Bend, Shape, Solder, and Rivet Sheet Metal	40.44
105 - Prune and Train Trees or Shrubs	40.44
64 - Improving Breeding Efficiency	39.32
69 - Alter Livestock or Poultry	38.76
103 - Install Drainage Systems	38.20
104 - Transplant Plants, Shrubs or Trees	37.64
94 - Rogue Diseased and Off-Type Plants	37.64
96 - Classify Soils	37.07
102 - Read and Interpret Blueprints	35.39
98 - Terrace, Level, Shape Land	35.39
88 - Test and Treat Seeds	34.83
108 - Maintain and Repair Power Transmission System	32.58
106 - Negotiate Consumer Credit	32.58
109 - Appraise Farms	29.77
121 - Organize a Partnership, Cooperative or Corp.	29.21
112 - Test Soil and Plant Tissue	28.65
101 - Operate, Maintain, and Repair Special Combine Harvesters	26.96
120 - Cure, Can or Freeze Farm Products	26.40
115 - Milk Cows and Handle Milk	24.15
119 - Conduct Varietal and Cultural Trails	23.59
113 - Plan and Conduct Soil Amendments	23.03
117 - Grade Farm Products	23.03
97 - Test, Weigh and Grade Livestock or Poultry Products	21.34
122 - Thin Fruit	20.78
114 - Layout and Construct Ponds and Lagoons	19.66
126 - Root, Graft or Bud Trees, Plants or Shrubs	17.41
116 - Plant Seeds and Produce Transplants	17.41
107 - Slaughter and Dress Livestock or Poultry	16.29
110 - Buy Livestock or Poultry for Slaughter	15.73
111 - Groom or Show Livestock or Poultry for Sale	15.16
127 - Market Milk	15.16
130 - Package and Label Farm Products	14.04

124 - Display Farm Products	14.04
129 - Pollinate Crops or Trees	12.92
123 - Manage a Farm Forest	12.92
118 - Layout and Construct Contours	11.23
128 - Ball and Burlap Plants, Shrubs and Trees	7.30
131 - Misc. Potting Soil	5.61
125 - Artificialiy Inseminate Cattle	5.05
132 - Manage Greenhouse Crops	1.68

Tables 4, 6, 8, 10, 12, 14 and 16 show, in rank order, percentages of respondents classified in each production category (Grain, Livestock, Dairy, Poultry, Forestry, Horticulture and General Farming) reporting performance of tasks. These data provide a partial base for planning instruction useful for work in each category of production.

Tables 5, 7, 9, 11, 13, 15 and 17 classify tasks into seven categories (Animal Care, Plant Production, Land Management, Harvesting and Processing, General Management, Marketing, Use and Care of Equipment). Tasks performed by each category of producer are listed in rank order of percentages of producers reporting performance. These data provide partial bases for planning instruction meeting major needs in each of those categories.

GRAIN PRODUCTION

Table 4 shows, in rank order, percentages of respondents classified primarily as grain producers who reported performance of tasks.

Table 4

NUMBERS AND PER CENTS OF GRAIN PRODUCTION RESPONDENTS REPORTING PERFORMANCE OF TYPES OF TASKS IN RANK ORDER

		Number	Percentage
1.	Identify and Control Weeds	29	100.0
2.	Plan and Conduct Conservation programs	29	100.0
3.	Harvest Farm Products	29	100.0
4.	Sell Farm Products	29	100.0
5.	Keep Farm Accounts	29	100.0
6.	Operate Tractors	29	100.0
7.	Operate Trucks	29	100.0
8.	Operate, Maintain and Repair Tillage Equipment	29	100.0
9.	Operate, Maintain and Repair Cultivation Equipment	29	100.0
10.	Maintain and Sharpen Tools	29	100.0
11.	Select Building Materials	28	96.6
12.	Fertilize Crops, Lawns, Shrubs or Trees	28	96.6
13.	Plan land Use	28	96.6
14.	Negotiate Purchase of Equipment	28	96.6
15.	Supervise Farm Labor	28	96.6
16.	Hire Farm Labor	28	96.6
17.	Sell Farm Commodities or Supplies	28	96.6
18.	Operate, Maintain and Repair Planting Equipment	28	96.6
19.	Operate, Maintain and Repair Grain Combine Harvesters	28	96.6
20.	Maintain and Repair Shop Machinery and Equipment	27	93.1
21.	Order Supplies and Parts	27	93.1
22.	Layout, Cut, Drill, Machine Braze Weld Metal	27	93.1
23.	Maintain and Repair Trucks, Truck Engines	27	93.1
24.	Maintain and Repair Tractor, Tractor Engines	27	93.1

		Number	Percentage
25.	Plan Farm Work Schedules	27	93.1
26.	Decide Upon Market Alternatives	26	89.6
27.	Interpret Market Reports	26	89.6
28.	Maintain and Repair Internal Combustion Engines	26	89.6
29.	Finish and Paint Exterior and Interior of Buildings	26	89.6
30.	Layout, Cut, Fit and Thread Pipe, Install Plumbing Systems	26	89.6
31.	Maintain and Repair Hydraulic Systems	25	86.2
32.	Take a soil sample	25	86.2
33.	Control Rodents	25	86.2
34.	Prepare Seedbeds	24	82.8
35.	Transport Farm Products	24	82.8
36.	Plan Farm Budgets	24	82.8
37.	Maintain a Farm Business Inventory	24	82.8
38.	Plan Schedules of Production	23	79.3
39.	Operate, Maintain and Repair Fertilizer Equipment	23	79.3
40.	Frame, Sheath, Roof Buildings	23	79.3
41.	Prepare Farm Income Tax Returns	22	75.9
42.	Plan Farm Insurance Programs	22	75.9
43.	Operate, Maintain and Repair Storage Equipment	22	75.9
44.	Estimate Repair or Construction Costs	22	75.9
45.	Organize Farm Enterprises	21	72.4
46.	Store Farm Products	21	72.4
47.	Cultivate and Mulch Crops	20	69.0
48.	Wire and Install Electrical Fixtures and Appliances	20	69.0
49.	Build Concrete Forms	20	69.0
50.	Identify and Control Insects	19	65.5
51.	Analyze Farm Accounts	19	65.5
52.	Maintain and Repair Electric Motors	19	65.5
53.	Operate, Maintain and Repair Forage Harvest Equipment	19	65.5
54.	Layout, Cut, Punch, Bend, Shape, Solder and Rivet Sheet Metal	19	65.5
55.	Mix, Pour, Finish and Cure Concrete	19	65.5
56.	Buy Farm Commodities	18	62.7
57.	Maintain and Repair Power Transmission Systems	18	62.7
58.	Operate, Maintain and Repair Special combine Harvesters	17	58.6
59.	Write a Will	17	58.6
60.	Prepare Farm Products for Sale	17	58.6
61.	Irrigate Crops, Lawns, Trees or Shrubs	17	58.6

		Number	Percentage
62.	Sell Livestock or Poultry Products	17	58.6
63.	Handle and Care for Livestock and Poultry	17	58.6
64.	Pasture Livestock	17	58.6
65.	Select Seeds or Nursery Stock	16	55.2
66.	Select Plant Varieties	16	55.2
67.	Diagnose and Control Disease	16	55.2
68.	Operate, Maintain and Repair Livestock and Poultry Handling Equipment	15	51.7
69.	Identify Livestock and Poultry	15	51.7
70.	Recognize, Prevent and Control Livestock and Poultry Disease	15	51.7
71.	Feed Livestock or Poultry	15	51.7
72.	Select Homegrown Feed	15	51.7
73.	Identify Economic Plants and Seeds	15	51.7
74.	Test Soil and Plant Tissue	15	51.7
75.	Measure and Weigh Farm Products	15	51.7
76.	Negotiate Production Credit	14	48.3
77.	Classify Soils	14	48.3
78.	Maintain and Repair Livestock and Poultry Housing Facilities	14	48.3
79.	Rogue Diseased and Off-Type Plants	13	44.8
80.	Test and Treat Seeds	13	44.8
81.	Negotiate Leases	13	44.8
82.	Organize Partnership, Cooperation or Corporation	13	44.8
83.	Mix Mortar, Lay Bricks and Blocks	13	44.8
84.	Balance Rations	12	41.4
85.	Store Feed	12	41.4
86.	Buy Feed	12	41.4
87.	Recognize Nutrient Deficiences	12	41.4
88.	Identify, Prevent and Control Livestock and Poultry Parasite	12	41.4
89.	Care for Animals During Gestation and Parturition	11	37.9
90.	Negotiate Purchase of Land	11	37.9
91.	Read and Interpret Blueprints	11	37.9
92.	Transport and Store Livestock or Poultry Products	10	34.5
93.	Mix Feed	10	34.5
94.	Select Livestock or Poultry for Production Programs	9	31.0
95.	Diagnose Pesticide Injury	9	31.0
96.	Appraise Farms	9	31.0
97.	Negotiate Farm Mortgages	8	27.6
98.	Install Drainage Systems	8	27.6
99.	Install Irrigation Systems	8	27.6
100.	Cure, Can or Freeze Farm Products	8	27.6

		Number	Percentage
101.	Grade Farm Products	8	27.6
102.	Drain Soils	8	27.6
103.	Prune and Train Trees or Shrubs	8	27.6
104.	Transplant Plants, Shrubs or Trees	8	27.6
105.	Improve Breeding Efficiency	8	27.6
106.	Select Livestock or Poultry for Breeding Programs	8	27.6
107.	Conduct Breeding Programs	8	27.6
108.	Alter Livestock or Poultry	7	24.1
109.	Keep and Use Management Records	7	24.1
110.	Plan and Control Soil Amendments	7	24.1
111.	Layout and Construct Ponds and Lagoons	7	24.1
112.	Negotiate Consumer Credit	7	24.1
113.	Buy Livestock or Poultry for Slaughter	6	20.7
114.	Conduct Varietal and Cultural Trails	6	20.7
115.	Terrace, Level, Shape Land	6	20.7
116.	Plant Seeds and Produce Transplants	4	13.8
117.	Test, Weigh and Grade Livestock and Poultry Products	4	13.8
118.	Groom or Show Livestock or Poultry For Sale	4	13.8
119.	Milk Cows and Handle Milk	4	13.8
120.	Slaughter and Dress Livestock or Poultry	3	10.3
121.	Display Farm Products	3	10.3
122.	Root, Graft or Bud Trees, Plants or Shrubs	2	6.9
123.	Ball and Burlap Plants, Shrubs and Trees	2	6.9
124.	Mix Potting Soil	2	6.9
125.	Artificially Inseminate Cattle	1	3.4
126.	Package and Label Farm Products	1	3.4
127.	Layout and Construct Contours	1	3.4
128.	Market Milk	0	0.0
129.	Pollinate Crops or Trees	0	0.0
130.	Thin Fruit	0	0.0
131.	Manage a Farm Forest	0	0.0
132.	Manage Greenhouse Crops	0	0.0

Table 5 shows categories of tasks performed by respondents classified primarily as grain producers. These data indicate that a farmer employed primarily in grain production also needs ability to perform tasks classified as management, marketing and equipment use and care. Major needs can be identified by examination of percentages shown on Table 4.

Table 5

CATEGORIES OF TASKS PERFORMED BY RANK ORDER
PERCENTAGES OF GRAIN PRODUCERS

	Percentage
ANIMAL CARE	
Livestock Breeding:	
Care for animals during gestation and parturition	37.9
Conduct breeding programs	27.6
Improving breeding efficiency	27.6
Artificially inseminate cattle	3.4
Livestock Selection:	
Select livestock or poultry for production programs	31.0
Select livestock or poultry for breeding programs	27.6
Buy livestock or poultry for slaughter	20.7
Livestock Nutrition:	
Pasture livestock	58.6
Feed livestock or poultry	51.7
Select homegrown feed	51.7
Balance rations	41.4
Buy Feed	41.4
Recognize nutrient deficiencies	41.4
Store feed	41.4
Mix feed	34.5
Livestock Health and Sanitation:	
Recognize, prevent, and control livestock and poultry diseases	51.7
Identify, prevent, and control livestock and poultry parasites	41.4
Livestock Production Management:	
Handle and care for livestock or poultry	58.6
Identify livestock or poultry	51.7
Operate, maintain, and repair livestock or poultry handling equipment	51.7
Maintain and repair livestock or poultry housing facilities	48.3
Alter livestock or poultry	24.1
Keep and use management records	24.1
Milk cows and handle milk	13.8

	Percentage
Livestock Marketing:	
Sell livestock or poultry products	58.6
Transport and store livestock or poultry products	34.5
Groom and show livestock or poultry for sale	13.8
Test, weigh and grade livestock or poultry products	13.8
Slaughter and dress livestock or poultry	10.3
Market milk	0.0
PLANT PRODUCTION	
Plant Propagation:	
Select seed or nursery stock	55.2
Select plant varieties	55.2
Identify economic plants and seeds	51.7
Rogue diseased and off-type plants	48.3
Test and treat seeds	48.3
Root, Graft or bud trees, plants or shrubs	6.9
Crop Production:	
Fertilize, crops lawns, shrubs or trees	96.6
Prepare seedbeds	82.8
Plan schedules of production	79.3
Cultivate and mulch crops	69.0
Irrigate crops, lawns, trees or shrubs	58.6
Prune and train trees or shrubs	27.6
Transplant plants, shrubs, or trees	79.3
Conduct varietal and cultural trails	20.7
Plant seeds and produce transplants	13.8
Ball and burlap plants, shrubs and trees	6.9
Manage greenhouse crops	0.0
Manage a farm forest	0.0
Pollinate crops or trees	0.0
Thin Fruit	0.0
Plant Pests:	
Identify and control weeds	100.0
Control rodents	86.2
Identify and control insects	65.5
Diagnose and control diseases	55.2
Diagnose pesticide injury	31.0
LAND MANAGEMENT	
Plan and conduct conservation programs	100.0
Plan land use	96.6
Take a soil sample	86.2
Test soil and plant tissue	51.7
Classify soils	48.3

	Percentage
Drain Soils	27.6
Plan and conduct soil amendments	24.1
Mix potting soil	6.9
Land Maintenance:	
Install drainage systems	27.6
Install irrigation systems	27.6
Layout and construct ponds and lagoons	24.1
Terrace, level, shape land	20.7
Layout and construct contours	3.4
HARVESTING AND PROCESSING	
Harvest farm products	100.0
Sell farm products	100.0
Transport farm products	82.8
Store farm products	72.4
Prepare farm products for sale	58.6
Manage and weigh farm products	51.7
Grade farm products	27.6
Cure, can or freeze farm products	27.6
Display farm products	10.3
Package and label farm products	3.4
GENERAL MANAGEMENT	
Farm Planning:	
Keep farm accounts	100.0
Maintain a farm business inventory	82.8
Plan farm budgets	82.8
Organize farm enterprises	72.4
Analyze farm accounts	65.5
Financial and Legal Protection:	
Negotiate purchase of equipment	96.6
Prepare farm income tax returns	75.9
Plan farm insurance programs	75.9
Write a will	58.6
Negotiate production credit	48.3
Negotiate leases	48.3
Organize a partnership, cooperative or corporation	48.3
Negotiate purchase of land	37.9
Appraise farms	31.0
Negotiate farm mortages	27.6
Negotiate consumer credit	24.1

	Percentage
Farm Personnel Management:	
Hire farm labor	96.6
Supervise farm labor	96.6
Plan farm work schedules	93.1
Marketing:	
Sell farm commodities or supplies	96.6
Decide upon market alternatives	89.6
Interpret market reports	89.6
Buy farm commodities	62.7
USE AND CARE OF EQUIPMENT	
Farm Power:	
Operate tractors	100.0
Operate trucks	100.0
Maintain and repair tractors, tractor engines	93.1
Maintain and repair trucks, truck engines	93.1
Maintain and repair internal combustion engines	89.6
Maintain and repair hydraulic systems	86.2
Maintain and repair electric motors	65.5
Maintain and repair power transmission systems	62.7
Machinery:	
Operate, maintain and repair tillage equipment	100.0
Operate, Maintain and repair cultivation equipment	100.0
Operate, maintain and repair planting equipment	96.6
Operate, maintain and repair grain combine harvesters	96.6
Operate, maintain and repair fertilizer equipment	79.3
Operate, maintain and repair storage equipment	75.9
Operate, maintain and repair forage harvest equipment	65.5
Operate, maintain and repair special combine harvesters	58.6
BUILDING MAINTENANCE AND CONSTRUCTION	
Maintain and sharpen tools	100.0
Select building materials	96.6
Layout, cut, drill, machine braze, weld metal	93.1
Maintain and repair shop machinery and equipment	93.1
Order supplies and parts	93.1
Finish and paint exterior and interior of buildings	89.6
Layout, fit, cut and thread pipe, install plumbing system	89.6
Frame, sheath, roof buildings	79.8
Estimate repair or construction costs	75.9
Wire and install electrical fixtures and appliances	69.0

	Percentage
Build concrete forms	69.0
Layout, cut, punch, bend, shape, solder and rivet sheet metal	65.5
Mix, pour, finish and cure concrete	65.5
Mix mortar, lay bricks and blocks	48.3
Read and interpret blueprints	37.9

LIVESTOCK PRODUCTION

Table 6 shows, in rank order, percentages of respondents classified primarily as livestock producers who reported performance of tasks.

Table 6

NUMBER AND PER CENTS OF LIVESTOCK PRODUCTION RESPONDENTS REPORTING PERFORMANCE OF TYPES OF TASKS, IN RANK ORDER

		Number	Percentage
1.	Harvest farm products	58	98.3
2.	Operate trucks	58	98.3
3.	Order supplies and parts	58	98.3
4.	Plan farm work schedules	57	96.7
5.	Hire farm labor	57	96.7
6.	Negotiate purchase of equipment	57	96.7
7.	Keep farm accounts	57	96.7
8.	Supervise farm labor	57	96.7
9.	Operate tractors	57	96.7
10.	Operate, maintain and repair tillage equipment	57	96.7
11.	Fertilize crops, lawns, shrubs or trees	56	95.0
12.	Identify and control weeds	55	91.7
13.	Handle and care for livestock or poultry	55	91.7
14.	Feed livestock or poultry	55	91.7
15.	Transport farm products	55	91.7
16.	Sell farm commodities or supplies	55	91.7
17.	Pasture livestock	54	90.8
18.	Operate, maintain and repair livestock or poultry handling equipment	54	90.8
19.	Maintain and sharpen tools	54	90.8
20.	Maintain or repair livestock or poultry housing facilities	53	89.8
21.	Operate, maintain and repair planting equipment	53	89.8
22.	Buy feed	53	89.8
23.	Store feed	53	89.8
24.	Plan land use	52	86.7
25.	Sell farm products	52	86.7
26.	Interpret market reports	52	86.7
27.	Select homegrown feed	52	86.7

		Number	Percentage
28.	Decide upon market alternatives	52	86.7
29.	Sell livestock or poultry products	51	85.0
30.	Recognize, pervent, and control livestock and poultry diseases	51	85.0
31.	Prepare seed beds	51	85.0
32.	Layout, cut drill, machine braze, weld metal	51	85.0
33.	Maintain and repair shop machinery and equipment	51	85.0
34.	Select building materials	50	83.3
35.	Plan and conduct conservation programs	50	83.3
36.	Identify, prevent, and control livestock and poultry parasites	50	83.3
37.	Maintain and repair tractors, tractor engines	49	81.7
38.	Maintain and repair trucks, truck engines	49	81.7
39.	Operate, maintain and repair cultivation equipment	49	81.7
40.	Maintain a farm business inventory	49	81.7
41.	Layout, cut, fit, thread pipe, install plumbing systems	48	80.1
42.	Operate, maintain, and repair grain combine harvesters	48	80.1
43.	Plan schedules of production	48	80.1
44.	Care for animals during gestation and parturition	46	78.0
45.	Take a soil sample	46	78.0
46.	Maintain and repair internal combustion engines	46	78.0
47.	Operate, maintain, and repair fertilizer equipment	46	78.0
48.	Select livestock or poultry for breeding programs	45	75.0
49.	Store farm products	45	75.0
50.	Buy farm commodities	44	73.8
51.	Balance rations	43	72.6
52.	Identify livestock and poultry	43	72.6
53.	Keep and use management records	43	72.6
54.	Control rodents	43	72.6
55.	Organize farm enterprises	43	72.6
56.	Operate, maintain and repair forage, harvest equipment	43	72.6
57.	Recognize nutrient deficiency	42	71.7
58.	Irrigate crops, lawns, trees and shrubs	42	71.7
59.	Identify and control insects	42	71.7
60.	Operate, maintain, and repair storage equipment	42	71.7

		Number	Percentage
61.	Frame, sheath, roof buildings	42	71.7
62.	Finish and paint exterior and interior of buildings	41	70.0
63.	Mix, pour, finish and cure concrete	41	70.0
64.	Improving breeding efficiency	40	66.7
65.	Mix feed	40	66.7
66.	Plan farm budgets	40	66.7
67.	Build concrete forms	39	65.0
68.	Conduct breeding programs	39	65.0
69.	Alter livestock or poultry	39	65.0
70.	Transport and store livestock or poultry products	39	65.0
71.	Estimate, repair or construction costs	38	63.3
72.	Select livestock or poultry for production programs	37	61.7
73.	Prepare farm income tax returns	37	61.7
74.	Plan farm insurance programs	37	61.7
75.	Maintain and repair hydralic systems	38	63.3
76.	Wire and install electrical fixtures and appliances	35	60.0
77.	Cultivate and mulch crops	34	58.3
78.	Prepare farm products for sale	34	58.3
79.	Measure and weigh farm products	31	53.3
80.	Analyze farm accounts	31	53.3
81.	Diagnose and control diseases	30	51.7
82.	Negotiate leases	29	50.0
83.	Identify economic plants and seeds	28	48.3
84.	Layout, cut, punch, bend, shape, solder and rivet sheet metal	28	48.3
85.	Write a will	27	46.7
86.	Negotiate production credit	26	45.0
87.	Negotiate purchase of land	25	41.7
88.	Test and treat seeds	25	41.7
89.	Select seed or nursery stock	24	40.8
90.	Install irrigation systems	22	38.3
91.	Mix mortar, lay bricks and blocks	21	36.7
92.	Maintain and repair electric motors	21	36.7
93.	Diagnose pesticide injury	21	36.7
94.	Rogue diseased and off-type plants	21	36.7
95.	Select plant varieties	21	36.7
96.	Classify soils	20	35.0
97.	Test, weigh and grade livestock or poultry products	19	33.3
98.	Terrace, level, shape land	19	33.3
99.	Negotiate farm mortgages	19	33.3
100.	Drain soils	17	30.0
101.	Operate, Maintain and repair special combine harvesters	17	30.0

		Number	Percentage
102.	Read and interpret blueprints	17	30.0
103.	Install drainage systems	16	28.3
104.	Transplant plants, shrubs or trees	16	28.3
105.	Prune and train trees or shrubs	15	26.7
106.	Negotiate consumer credit	15	26.7
107.	Slaughter and dress livestock or poultry	15	26.7
108.	Maintain and repair power transmission systems	14	25.0
109.	Appraise farms	14	25.0
110.	Buy livestock or poultry for slaughter	13	21.7
111.	Groom or show livestock or poultry for sale	13	21.7
112.	Test soil and plant tissue	13	21.7
113.	Plan and conduct soil amendments	13	21.7
114.	Layout and construct ponds and lagoons	13	21.7
115.	Milk cows and handle milk	12	20.8
116.	Plant seeds and produce transplants	11	20.0
117.	Grade farm products	10	18.3
118.	Layout and construct contours	8	13.8
119.	Conduct varietal and cultural trails	8	13.8
120.	Cure, can or freeze farm products	8	13.8
121.	Organize a partnership, cooperative or corporation	8	13.8
122.	Thin fruit	7	11.8
123.	Manage a farm forest	7	11.8
124.	Display farm products	6	10.1
125.	Artificially inseminate cattle	4	6.7
126.	Root, graft, or bud trees, plants or shrubs	3	5.0
127.	Market milk	3	5.0
128.	Ball and burlap plants, shrubs and trees	2	3.3
129.	Pollinate crops or trees	2	3.3
130.	Package and label farm products	2	3.3
131.	Mix potting soil	1	1.7
132.	Manage greenhouse crops	0	0.0

Table 7 shows categories of tasks performed by respondents classified primarily as livestock producers. These data show that farmers engaged in livestock production have substantial need for capabilities required for performance of tasks involved in animal care, plant production, management, marketing and equipment use and care. Major needs can be identified by examination of percentages shown on Table 6.

Table 7

CATEGORIES OF TASKS PERFORMED BY RANK ORDER
PERCENTAGES OF LIVESTOCK PRODUCERS

	Percentage
ANIMAL CARE	
Livestock Breeding:	
Care for animals during gestation and parturition	78.0
Improving breeding efficiency	66.7
Conduct breeding programs	65.0
Artificially inseminate cattle	6.7
Livestock Selection:	
Select livestock or poultry for breeding programs	75.0
Select livestock or poultry for production programs	61.7
Buy livestock or poultry for slaughter	21.7
Livestock Nutrition:	
Feed livestock or poultry	91.7
Pasture livestock	90.8
Buy feed	88.3
Store feed	88.3
Select homegrown feed	86.7
Balance rations	72.6
Recognize nutrient deficiencies	71.7
Mix feed	66.7
Livestock Health and Sanitation:	
Recognize, prevent, and control livestock and poultry diseases	85.0
Identify, prevent, and control livestock and poultry parasites	83.3
Livestock Production Management:	
Handle and care for livestock or poultry	91.7
Operate, maintain, and repair livestock or poultry handling equipment	90.8
Maintain and repair livestock or poultry housing facilities	90.0
Identify livestock or poultry	72.6
Keep and use management records	72.6
Alter livestock or poultry	65.0
Milk cows and handle milk	20.8

	Percentage
Livestock Marketing:	
Sell livestock or poultry products	85.0
Transport and store livestock or poultry products	65.0
Test, weigh, and grade livestock or poultry products	33.3
Slaughter and dress livestock or poultry	26.7
Groom and show livestock or poultry for sale	21.7
Market milk	5.0
PLANT PRODUCTION	
Plant Propagation:	
Identify economic plants and seeds	48.3
Select seed or nursery stock	40.8
Test and treat seeds	41.7
Rogue diseased and off-type plants	36.7
Select plant varieties	36.7
Root, graft, or bud trees, plants or shrubs	5.0
Crop Production:	
Fertilize crops, lawns, shrubs, or trees	95.0
Prepare seedbeds	85.0
Plan schedules or production	80.1
Irrigate crops, lawns, trees, or shrubs	71.7
Cultivate and mulch crops	58.3
Transplant plants, shrubs, or trees	28.3
Prune and train trees or shrubs	26.7
Plant seeds and produce transplants	20.0
Conduct varietal and cultural trails	13.8
Manage a farm forest	11.8
Thin fruit	11.8
Ball and burlap plants, shrubs, and trees	3.3
Pollinate crops or trees	3.3
Manage greenhouse crops	0.0
Plant Pests:	
Identify and control weeds	91.7
Control rodents	72.6
Identify and control insects	71.7
Diagnose pesticide injury	51.7
Diagnose and control diseases	36.7
LAND MANAGEMENT	
Plan land use	86.7
Plan and conduct conservation programs	83.3
Take a soil sample	78.0

	Percentage
Classify soils	35.0
Drain soils	30.0
Plan and conduct soil amendments	21.7
Test soil and plant tissue	21.7
Mix potting soil	1.7
Land Maintenance:	
Install irrigation systems	38.3
Terrace, level, shape land	33.3
Install drainage systems	28.3
Layout and construct ponds and lagoons	21.7
Layout and construct contours	13.8
HARVESTING AND PROCESSING	
Harvest farm products	98.3
Transport farm products	91.7
Sell farm products	86.7
Store farm products	75.0
Prepare farm products for sale	58.3
Measure and weigh farm products	53.3
Grade farm products	18.3
Cure, can or freeze farm products	13.8
Display farm products	10.1
Package and label farm products	3.3
GENERAL MANAGEMENT	
Farm Planning:	
Keep farm accounts	96.7
Maintain a farm business inventory	81.7
Organize a farm enterprise	72.6
Plan farm budgets	66.7
Analyze farm accounts	53.3
Financial and Legal Protection:	
Negotiate purchase of equipment	96.7
Prepare farm income tax returns	61.7
Plan farm insurance programs	61.7
Negotiate leases	50.0
Write a will	46.7
Negotiate production credit	45.0
Negotiate purchase of land	41.7
Negotiate farm mortgages	33.3
Negotiate consumer credit	26.7
Appraise farms	25.0
Organize a partnership, cooperative or corporation	13.8

	Percentage
Farm Personnel Management:	
Hire farm labor	96.7
Plan farm work schedules	96.7
Supervise farm labor	96.7
MARKETING	
Sell farm commodities or supplies	91.7
Decide upon market alternatives	86.7
Interpret market reports	86.7
Buy farm commodities	73.8
USE AND CARE OF EQUIPMENT	
Farm Power:	
Operate trucks	98.3
Operate tractors	96.7
Maintain and repair tractors, tractor engines	81.7
Maintain and repair trucks, turck engines	81.7
Maintain and repair internal combustion engines	78.0
Maintain and repair hydraulic systems	63.3
Maintain and repair electric motors	36.7
Maintain and repair power transmission systems	25.0
Machinery:	
Operate, maintain and repair tillage equipment	96.7
Operate, maintain and repair planting equipment	90.0
Operate, maintain and repair cultivation equipment	81.7
Operate, maintain and repair grain combine harvesters	80.1
Operate, maintain and repair fertilizer equipment	78.0
Operate, maintain and repair forage harvest equipment	72.6
Operate, maintain and repair storage equipment	71.7
Operate, maintain and repair special combine harvesters	30.0
BUILDING MAINTENANCE AND CONSTRUCTION	
Order supplies and parts	98.3
Maintain and sharpen tools	90.8
Maintain and repair shop machinery and equipment	85.0
Layout, cut, drill, machine braze, weld metal	85.0
Select building materials	83.3

	Percentage
Layout, fit, cut and thread pipe, install plumbing system	80.1
Frame, sheath, roof buildings	71.7
Finish and paint exterior and interior of buildings	70.0
Mix, pour, finish and cure concrete	70.0
Build concrete forms	65.0
Estimate repair or construction costs	63.3
Wire and install electrical fixtures and appliances	60.0
Layout, cut, punch, bend, shape, solder and rivet sheet metal	48.3
Mix mortar, lay bricks and blocks	36.7
Read and interpret blueprints	30.0

DAIRY PRODUCTION

Table 8 shows, in rank order, percentages of respondents classified primarily as dairy producers who reported performance of tasks.

Table 8

NUMBERS AND PER CENTS OF DAIRY PRODUCTION RESPONDENTS PERFORMANCE OF TYPES OF TASKS, IN RANK ORDER

		Number	Percentage
1.	Select homegrown feed	22	100.0
2.	Store feed	22	100.0
3.	Pasture livestock	22	100.0
4.	Buy feed	22	100.0
5.	Feed livestock or poultry	22	100.0
6.	Recognize, prevent and control livestock and poultry diseases	22	100.0
7.	Maintain and repair livestock or poultry housing facilities	22	100.0
8.	Handle and care for livestock or poultry	22	100.0
9.	Operate, maintain and repair livestock or poultry handling equipment	22	100.0
10.	Keep and use management records	22	100.0
11.	Milk cows and handle milk	22	100.0
12.	Operate tractors	22	100.0
13.	Sell livestock or poultry products	22	100.0
14.	Select building materials	22	100.0
15.	Fertilize crops, lawns, shrubs or trees	21	95.7
16.	Identify and control weeds	21	95.7
17.	Plan land use	21	95.7
18.	Plan farm work schedules	21	95.7
19.	Supervise farm labor	21	95.7
20.	Operate trucks	21	95.7
21.	Operate, maintain and repair tillage equipment	21	95.7
22.	Operate, maintain and sharpen tools	21	95.7
23.	Order supplies and parts	21	95.7
24.	Finish and paint interior and exteriors of buildings	20	91.3
25.	Operate, maintain and repair planting equip ment	20	91.3
26.	Operate, maintain and repair forage harvest equipment	20	91.3

		Number	Percentage
27.	Maintain and repair tractors, tractor engines	20	91.3
28.	Hire farm labor	20	91.3
29.	Keep farm accounts	20	91.3
30.	Plan schedules or production	20	91.3
31.	Identify, prevent and control livestock and poultry parasites	20	91.3
32.	Care for animals during gestation and parturition	20	91.3
33.	Prepare seed beds	19	87.0
34.	Negotiate purchase of equipment	19	87.0
35.	Operate, maintain and repair fertilizer equipment	19	87.0
36.	Estimate repairs or construction costs	19	87.0
37.	Maintain and repair shop machinery and equipment	19	87.0
38.	Build concrete forms	18	82.6
39.	Mix, pour, finish and cure concrete	18	82.6
40.	Layout, cut, file and thread pipe, install plumbing systems	18	82.6
41.	Operate, maintain and repair cultivation equipment	18	82.6
42.	Buy farm commodities	18	82.6
43.	Sell farm commodities or supplies	18	82.6
44.	Maintain a farm business inventory	18	82.6
45.	Analyze farm accounts	18	82.6
46.	Harvest farm products	18	82.6
47.	Identify livestock or poultry	18	82.6
48.	Select livestock or poultry for production programs	18	82.6
49.	Market milk	17	78.3
50.	Take a soil sample	17	78.3
51.	Store farm products	17	78.3
52.	Sell farm products	17	78.3
53.	Organize farm enterprises	17	78.3
54.	Plan farm budgets	17	78.3
55.	Maintain and repair trucks, truck engines	17	78.3
56.	Operate, maintain and repair storage equipment	16	73.9
57.	Frame, sheath, roof buildings	16	73.9
58.	Control rodents	16	73.9
59.	Recognize nutrient deficiences	16	73.9
60.	Select livestock or poultry for breeding programs	16	73.9
61.	Balance rations	15	69.6
62.	Identify and control insects	15	69.6
63.	Diagnose and control diseases	15	69.6

		Number	Percentage
64.	Drain soil	15	69.6
65.	Plan farm insurance programs	15	69.6
66.	Interpret market reports	15	69.6
67.	Maintain and repair internal combustion engines	15	69.6
68.	Conduct breeding programs	14	68.2
69.	Negotiate production credit	13	60.9
70.	Decide upon market alternatives	13	60.9
71.	Layout, cut, drill, machine braze, weld metal	13	60.9
72.	Improve breeding efficiency	12	56.5
73.	Transport and store livestock or poultry products	12	56.5
74.	Irrigate crops, lawns, trees or shrubs	12	56.5
75.	Plan and conduct conservation programs	12	56.5
76.	Prepare farm products for sale	12	56.5
77.	Negotiate farm mortgages	12	56.5
78.	Maintain and repair hydraulic systems	12	56.5
79.	Alter livestock or poultry	11	52.2
80.	Prepare farm income tax returns	11	52.2
81.	Maintain and repair electric motors	11	52.2
82.	Wire and install electrical fixtures and appliances	11	52.2
83.	Cultivate and mulch crops	10	47.8
84.	Transport farm products	10	47.8
85.	Terrace, level, shape land	10	47.8
86.	Install drainage systems	10	47.8
87.	Read and interpret blueprints	10	47.8
88.	Mix mortar, lay bricks and blocks	10	47.8
89.	Identify economic plants and seeds	10	47.8
90.	Select seeds or nursery stock	9	43.5
91.	Negotiate leases	9	43.5
92.	Negotiate consumer credit	9	43.5
93.	Mix feed	8	39.1
94.	Select plant varieties	8	39.1
95.	Prune and train trees or shrubs	8	39.1
96.	Measure and weigh farm products	8	39.1
97.	Install irrigation systems	8	39.1
98.	Negotiate purchase of land	7	34.8
99.	Maintain and repair power transmission systems	7	34.8
100.	Layout, cut, punch, bend, shape, solder and rivet sheet metal	7	34.8
101.	Test, weigh and grade livestock or poultry products	6	30.4
102.	Test and treat seeds	6	30.4
103.	Diagnose pesticide injuries	6	30.4

		Number	Percentage
104.	Appraise farms	6	30.4
105.	Groom or show livestock or poultry for sale	5	26.1
106.	Slaughter and dress livestock or poultry	5	26.1
107.	Manage a farm forest	5	26.1
108.	Classify soils	5	26.1
109.	Write a will	5	26.1
110.	Organize a partnership, cooperation or corporation	5	26.1
111.	Operate, maintain and repair special combine harvesters	4	21.7
112.	Cure, can or freeze farm products	4	21.7
113.	Transplant plants, shrubs or trees	4	21.7
114.	Conduct varietal and cultural trails	3	17.4
115.	Test soil and plant tissues	3	17.4
116.	Plan and conduct soil amendments	3	17.4
117.	Operate, maintain and repair grain combine harvesters	3	17.4
118.	Artificially inseminate cattle	2	13.0
119.	Rogue diseased and off-type plants	2	13.0
120.	Plant seeds and produce transplants	2	13.0
121.	Layout and construct ponds and lagoons	2	13.0
122.	Layout and construct contours	2	13.0
123.	Root, graft or bud trees, plants or shrubs	1	4.3
124.	Display farm products	1	4.3
125.	Buy livestock or poultry for slaughter	1	4.3
126.	Thin fruit	1	4.3
127.	Manage greenhouse crops	1	4.3
128.	Mix potting soil	1	4.3
129.	Grade farm products	1	4.3
130.	Package and label farm products	1	4.3
131.	Pollinate crops or trees	0	0.0
132.	Ball and burlap plants, shrubs and trees	0	0.0

Table 9 shows categories of tasks performed by respondents classified primarily as dairy producers. These data show that farmers engaged in dairy production have substantial need for capabilities required for performance of tasks involved in animal care, plant production, management, marketing, and equipment use and care. Major needs can be identified by examination of percentages shown on Table 8.

Table 9

CATEGORIES OF TASKS PERFORMED BY RANK ORDER
PERCENTAGES OF DAIRY PRODUCERS

	Percentage
ANIMAL CARE	
Livestock Breeding:	
Care for animals during gestation and parturition	91.3
Conduct breeding programs	68.2
Improve breeding efficiency	56.5
Artificially inseminate cattle	13.0
Livestock Selection:	
Select livestock or poultry for production programs	82.6
Select livestock or poultry for breeding programs	73.9
Buy livestock or poultry for slaughter	4.3
Livestock Nutrition:	
Buy feed	100.0
Feed livestock or poultry	100.0
Pasture livestock	100.0
Select homegrown feed	100.0
Store feed	100.0
Recognize nutrient deficiencies	73.9
Balance rations	69.6
Mix feed	39.1
Livestock Health and Sanitation:	
Recognize, prevent and control livestock and poultry diseases	100.0
Identify, prevent and control livestock and poultry parasites	91.3
Livestock Production Management:	
Handle and care for livestock or poultry	100.0
Keep and manage records	100.0
Maintain and repair livestock or poultry housing facilities	100.0
Milk cows and handle milk	100.0
Operate, maintain and repair livestock or poultry handling equipment	100.0
Identify livestock or poultry	82.6
Alter livestock or poultry	52.2

	Percentage
Livestock Marketing:	
Sell livestock or poultry products	100.0
Market milk	78.3
Transport and store livestock or poultry products	56.4
Test, weigh and grade livestock or poultry products	30.4
Groom and show livestock or poultry for sale	26.1
Slaughter and dress livestock or poultry	26.1
PLANT PRODUCTION	
Plant propagation:	
Identify economic plants and seeds	47.8
Select seed or nursery stock	43.5
Select plant varieties	39.1
Test and treat seeds	30.4
Rogue diseased and off-type plants	13.0
Root, graft or bud trees, plants or shrubs	4.3
Crop Production:	
Fertilize crops, lawns, shrubs or trees	95.7
Plan schedules of production	91.3
Prepare seed beds	87.0
Irrigate crops, lawns, trees or shrubs	56.5
Cultivate and mulch crops	47.8
Prune and train trees or shrubs	39.1
Manage a farm forest	26.1
Transplant plants, shrubs or trees	21.7
Conduct varietal and cultural trails	17.4
Plant seeds and produce transplants	13.0
Manage greenhouse crops	4.3
Thin fruit	4.3
Ball and burlap plants, shrubs and trees	0.0
Pollinate crops or trees	0.0
Plant Pests:	
Identify and control weeds	95.7
Control rodents	73.9
Diagnose and control diseases	69.6
Identify and control insects	69.6
Diagnose pesticide injury	30.4
LAND MANAGEMENT	
Plan land use	95.7
Take a soil sample	78.3
Drain soils	69.6
Plan and conduct conservation programs	56.5

	Percentage
Classify soils	26.1
Plan and conduct soil amendments	17.4
Test soil and plant tissue	17.4
Mix potting soil	4.3
Land Maintenance:	
Install drainage systems	47.8
Terrace, level, shape land	47.8
Install irrigation systems	39.1
Layout and construct contours	13.0
Layout and construct ponds and lagoons	13.0
GENERAL MANAGEMENT	
Farm Planning:	
Keep farm accounts	91.3
Analyze farm accounts	82.6
Maintain a farm business inventory	82.6
Organize farm enterprises	78.3
Plan farm budgets	78.3
Financial and Legal Protection:	
Negotiate purchase of equipment	87.0
Plan farm insurance programs	69.6
Negotiate production credit	60.9
Negotiate farm mortgages	56.5
Prepare farm income tax returns	52.2
Negotiate consumer credit	43.5
Negotiate leases	43.5
Negotiate purchase of land	34.8
Appraise farms	30.4
Organize a partnership, cooperative or corporation	26.1
Write a will	26.1
Farm Personnel Management:	
Plan farm work schedules	95.7
Supervise farm labor	95.7
Hire farm labor	91.3
HARVESTING AND PROCESSING	
Harvest farm products	82.6
Store farm products	78.3
Sell farm products	78.3
Prepare farm products for sale	56.5
Transport farm products	47.8
Measure and weigh farm products	39.1
Cure, can or freeze farm products	21.7

	Percentage
Display farm products	4.3
Grade farm products	4.3
Package and label farm products	4.3
MARKETING	
Buy farm commodities	82.6
Sell farm commodities or supplies	82.6
Interpret market reports	69.6
Decide upon market alternatives	60.0
EQUIPMENT USE AND CARE	
Farm Power:	
Operate tractors	100.0
Operate trucks	95.7
Maintain and repair tractors, tractor engines	91.3
Maintain and repair trucks, truck engines	78.3
Maintain and repair internal combustion engines	69.6
Maintain and repair hydraulic systems	56.5
Maintain and repair electric motors	52.2
Maintain and repair power transmission systems	34.8
Machinery:	
Operate, maintain and repair tillage equipment	95.7
Operate, maintain and repair forage harvest equipment	91.3
Operate, maintain and repair planting equipment	91.3
Operate, maintain and repair fertilizer equipment	87.0
Operate, maintain and repair cultivation equipment	82.6
Operate, maintain and repair storage equipment	73.9
Operate, maintain and repair special combine harvesters	21.7
Operate, maintain and repair grain combine harvesters	17.4
BUILDING MAINTENANCE AND CONSTRUCTION	
Select building materials	100.0
Maintain and sharpen tools	95.7
Finish and paint exterior and interior of buildings	95.7
Order supplies and parts	95.7
Maintain and repair shop machinery and equipment	87.0
Estimate repair or construction costs	87.0
Build concrete forms	82.6
Mix, pour, finish and cure concrete	82.6
Layout, fit, cut and thread pipe, install plumbing system	82.6
Frame, sheath, roof buildings	73.9
Layout, cut, drill, machine braze, weld metal	60.9
Wire and install electrical fixtures and appliances	52.2
Read and interpret blueprints	47.8
Mix mortar, lay bricks and blocks	34.8
Layout, cut, punch, bend, shape, solder and rivet sheet metal	34.8

POULTRY PRODUCTION

Table 10 shows, in rank order, percentages of respondents classified primarily as poultry producers who reported performance of tasks.

Table 10

NUMBERS AND PER CENTS OF POULTRY PRODUCTION RESPONDENTS REPORTING PERFORMANCE OF TYPES OF TASKS, IN RANK ORDER

		Number	Percentage
1.	Select livestock or poultry for production programs	6	100.0
2.	Recognize nutrient deficiencies	6	100.0
3.	Feed livestock or poultry	6	100.0
4.	Recognize, prevent and control livestock and poultry disease	6	100.0
5.	Identify, prevent and control livestock and poultry parasite	6	100.0
6.	Sell livestock or poultry products	6	100.0
7.	Supervise farm labor	6	100.0
8.	Hire farm labor	6	100.0
9.	Buy feed	5	83.3
10.	Maintain and repair livestock or poultry housing facilities	5	83.3
11.	Handle and care for poultry or livestock	5	83.3
12.	Operate, maintain and repair livestock or poultry handling equipment	5	83.3
13.	Maintain a farm business inventory	5	83.3
14.	Keep farm accounts	5	83.3
15.	Plan farm work schedules	5	83.3
16.	Sell farm commodities or supplies	5	83.3
17.	Buy farm commodities	5	83.3
18.	Operate tractors	5	83.3
19.	Operate trucks	5	83.3
20.	Select building materials	5	83.3
21.	Estimate repair or construction costs	5	83.3
22.	Control rodents	5	83.3
23.	Select homegrown feed	4	66.7
24.	Pasture livestock	4	66.7
25.	Keep and use management records	4	66.7
26.	Fertilize crops, lawns, shrubs or trees	4	66.7
27.	Identify and control weeds	4	66.7

		Number	Percentage
28.	Plan land use	4	66.7
29.	Take a soil sample	4	66.7
30.	Sell farm products	4	66.7
31.	Negotiate purchase of equipment	4	66.7
32.	Prepare farm income tax returns	4	66.7
33.	Plan farm insurance programs	4	66.7
34.	Decide upon market alternatives	4	66.7
35.	Interpret market reports	4	66.7
36.	Maintain and repair tractors, tractor engines	4	66.7
37.	Operate, maintain and repair tillage equipment	4	66.7
38.	Maintain and sharpen tools	4	66.7
39.	Order supplies and parts	4	66.7
40.	Maintain and repair shop machinery and equipment	4	66.7
41.	Select livestock or poultry for breeding programs	3	50.0
42.	Store feed	3	50.0
43.	Alter livestock or poultry	3	50.0
44.	Transport and store livestock or poultry products	3	50.0
45.	Identify and control insects	3	50.0
46.	Plan and conduct conservation programs	3	50.0
47.	Drain soils	3	50.0
48.	Install drainage systems	3	50.0
49.	Write a will	3	50.0
50.	Negotiate production credit	3	50.0
51.	Maintain and repair internal combustion engines	3	50.0
52.	Maintain and repair electric motors	3	50.0
53.	Maintain and repair hydraulic systems	3	50.0
54.	Operate, maintain and repair cultivation equipment	3	50.0
55.	Operate, maintain and repair planting equipment	3	50.0
56.	Operate, maintain and repair fertilizer equipment	3	50.0
57.	Read and interpret blueprints	3	50.0
58.	Frame, sheath, roof buildings	3	50.0
59.	Finish and paint exterior and interior of buildings	3	50.0
60.	Layout, cut, file and thread pipe, install plumbing systems	3	50.0
61.	Layout, cut, drill, machine braze, weld metal	3	50.0
62.	Wire and install electrical fixtures and appliances	3	50.0

		Number	Percentage
63.	Build concrete forms	3	50.0
64.	Mix, pour, finish and cure concrete	3	50.0
65.	Care for animals during gestation and parturition	2	33.3
66.	Balance rations	2	33.3
67.	Mix feed	2	33.3
68.	Identify livestock or poultry	2	33.3
69.	Test, weigh and grade livestock or poultry products	2	33.3
70.	Cultivate and mulch crops	2	33.3
71.	Prepare seed beds	2	33.3
72.	Irrigate crops, lawns, trees or shrubs	2	33.3
73.	Diagnose and control diseases	2	33.3
74.	Harvest farm products	2	33.3
75.	Store farm products	2	33.3
76.	Organize farm enterprises	2	33.3
77.	Plan farm budgets	2	33.3
78.	Analyze farm accounts	2	33.3
79.	Negotiate purchase of land	2	33.3
80.	Negotiate farm mortgages	2	33.3
81.	Operate, maintain and repair forage harvest equipment	2	33.3
82.	Operate, maintain and repair storage equipment	2	33.3
83.	Mix mortar, lay bricks and blocks	2	33.3
84.	Layout, cut, punch, bend, shape, solder and rivet sheet metal	2	33.3
85.	Conduct breeding programs	1	16.7
86.	Improve breeding efficiency	1	16.7
87.	Buy livestock or poultry for slaughter	1	16.7
88.	Groom or show livestock or poultry for sale	1	16.7
89.	Slaughter and dress livestock or poultry	1	16.7
90.	Market milk	1	16.7
91.	Plan schedules of production	1	16.7
92.	Diagnose pesticide injuries	1	16.7
93.	Grade farm products	1	16.7
94.	Prepare farm products for sale	1	16.7
95.	Measure and weigh farm products	1	16.7
96.	Cure, can or freeze farm products	1	16.7
97.	Package and label farm products	1	16.7
98.	Transplant farm products	1	16.7
99.	Install irrigation systems	1	16.7
100.	Terrace, level, shape land	1	16.7
101.	Appraise farms	1	16.7
102.	Negotiate consumer credit	1	16.7
103.	Organize a partnership, cooperative or corporation	1	16.7

		Number	Percentage
104.	Maintain and repair trucks, truck engines	1	16.7
105.	Operate, maintain and repair grain combine harvesters	1	16.7
106.	Artificially inseminate cattle	0	0.0
107.	Milk cows and handle milk	0	0.0
108.	Identify economic plants and seeds	0	0.0
109.	Select seeds or nursery stock	0	0.0
110.	Root, graft or bud trees, plants or shrubs	0	0.0
111.	Select plant varieties	0	0.0
112.	Rogue diseased and off-type plants	0	0.0
113.	Plant seeds and produce plants	0	0.0
114.	Test and treat seeds	0	0.0
115.	Transplant plants, shrubs or trees	0	0.0
116.	Pollinate crops or trees	0	0.0
117.	Thin fruit	0	0.0
118.	Manage a farm forest	0	0.0
119.	Ball and burlap plants, shrubs and trees	0	0.0
120.	Prune and train trees or shrubs	0	0.0
121.	Manage greenhouse crops	0	0.0
122.	Conduct varietal and cultural trails	0	0.0
123.	Classify soils	0	0.0
124.	Test soil and plant tissues	0	0.0
125.	Plan and conduct soil amendments	0	0.0
126.	Mix potting soil	0	0.0
127.	Display farm products	0	0.0
128.	Layout and construct ponds and lagoons	0	0.0
129.	Layout and construct contours	0	0.0
130.	Negotiate leases	0	0.0
131.	Maintain and repair power transmission systems	0	0.0
132.	Operate, maintain and repair special combine harvesters	0	0.0

Table 11 shows categories of tasks performed by respondents classified primarily as poultry producers. These data show that farmers engaged in poultry production have substantial need for capabilities required for performance of tasks involved in poultry care, management, marketing, and equipment use and care. Major needs can be identified by examination of percentages shown on Table 10.

Table 11

CATEGORIES OF TASKS PERFORMED BY RANK ORDER
PERCENTAGES OF POULTRY PRODUCERS

	Percentage
ANIMAL CARE	
Livestock Breeding:	
Care for animals during gestation and parturition	33.3
Conduct breeding programs	16.7
Improve breeding efficiency	16.7
Artificially inseminate cattle	0.0
Livestock Selection:	
Select livestock or poultry for production programs	100.0
Select livestock or poultry for breeding programs	50.0
Buy livestock or poultry for slaughter	16.7
Livestock Nutrition:	
Feed livestock or poultry	100.0
Recognize nutrient deficiencies	100.0
Buy feed	83.3
Pasture livestock	66.7
Select homegrown feed	66.7
Balance rations	33.3
Mix feed	33.3
Store feed	33.3
Livestock Health and Sanitation:	
Identify, prevent and control livestock and poultry parasites	100.0
Recognize, prevent and control livestock and poultry diseases	100.0
Livestock Production Management:	
Handle and care for livestock or poultry	83.3
Maintain and repair livestock or poultry housing facilities	83.3
Operate, maintain, and repair livestock or poultry handling equipment	83.3
Keep and use management records	66.7
Alter livestock or poultry	50.0
Identify livestock or poultry	33.3
Milk cows and handle milk	0.0

	Percentage
PLANT PRODUCTION	
Plant Propagation:	
Identify economic plants and seeds	0.0
Root, graft or bud trees, plants, or shrubs	0.0
Rogue diseased and off-type plants	0.0
Select seed or nursery stock	0.0
Select plant varieties	0.0
Test and treat seeds	0.0
Crop Production:	
Fertilize crops, lawns, shrubs or trees	66.7
Cultivate and mulch crops	33.3
Irrigate crops, lawns, trees or shrubs	33.3
Prepare seed beds	33.3
Plan schedules of production	16.7
Ball and burlap plants, shrubs and trees	0.0
Conduct varietal and cultural trails	0.0
Manage greenhouse crops	0.0
Manage a farm forest	0.0
Pollinate crops or trees	0.0
Prune and train trees or shrubs	0.0
Plant seeds and produce transplants	0.0
Thin fruit	0.0
Transplant plants, shrubs or trees	0.0
Plant Pests:	
Control rodents	83.3
Identify and control weeds	66.7
Identify and control insects	50.0
Diagnose and control diseases	33.3
Diagnose pesticide injury	16.7
LAND MANAGEMENT	
Plan land use	66.7
Take a soil sample	66.7
Drain soils	50.0
Plan and conduct conservation programs	50.0
Classify soils	0.0
Mix potting soil	0.0
Plan and conduct soil amendments	0.0
Test soil and plant tissue	0.0
Land Maintenance:	
Install drainage systems	50.0
Install irrigation systems	16.7
Terrace, level, shape land	16.7

	Percentage
Layout and construct contours	0.0
Layout and construct ponds and lagoons	0.0
HARVESTING AND PROCESSING	
Sell farm products	66.7
Harvest farm products	33.3
Store farm products	33.3
Cure, can or freeze farm products	16.7
Grade farm products	16.7
Measure and weigh farm products	16.7
Prepare farm products for sale	16.7
Transport farm products	16.7
Display farm products	0.0
Package and label farm products	0.0
GENERAL MANAGEMENT	
Farm Planning:	
Keep farm accounts	83.3
Maintain a farm business inventory	83.3
Analyze farm accounts	33.3
Organize farm enterprises	33.3
Plan farm budgets	33.3
Financial and Legal Protection:	
Negotiate purchase of equipment	66.7
Plan farm insurance programs	66.7
Prepare farm income tax returns	66.7
Negotiate production credit	50.0
Write a will	50.0
Negotiate farm mortgages	33.3
Negotiate purchase of land	33.3
Negotiate consumer credit	16.7
Organize a partnership, cooperative or corporation	16.7
Appraise farms	16.7
Negotiate leases	0.0
Farm Personnel Management:	
Hire farm labor	100.0
Supervise farm labor	100.0
Plan farm work schedules	83.3
MARKETING	
Buy farm commodities	83.3
Sell farm commodities or supplies	83.3
Decide upon market alternatives	66.7
Interpret market reports	66.7
Livestock Marketing:	
Sell livestock or poultry products	100.0
Transport and store livestock or poultry products	50.0

	Percentage
Test, weigh and grade livestock or poultry products	33.3
Groom and show livestock or poultry for sale	16.7
Market milk	16.7
Slaughter and dress livestock or poultry	16.7
USE AND CARE OF EQUIPMENT	
Farm Power:	
Operate tractors	83.3
Operate trucks	83.3
Maintain and repair tractors, tractor engines	66.7
Maintain and repair internal combustion engines	50.0
Maintain and repair hydraulic systems	50.0
Maintain and repair electric motors	50.0
Maintain and repair trucks, truck engines	16.7
Maintain and repair power transmission systems	0.0
Machinery:	
Operate, maintain and repair tillage equipment	66.7
Operate, maintain and repair planting equipment	50.0
Operate, maintain and repair cultivation equipment	50.0
Operate, maintain and repair fertilizer equipment	50.0
Operate, maintain and repair forage harvest equipment	33.3
Operate, maintain and repair storage equipment	33.3
Operate, maintain and repair grain combine harvesters	16.7
Operate, maintain and repair special combine harvesters	0.0
BUILDING MAINTENANCE AND REPAIR	
Estimate repair or construction costs	83.3
Select building materials	83.3
Maintain and sharpen tools	66.7
Maintain and repair shop machinery and equipment	66.7
Order supplies and parts	66.7
Build concrete forms	50.0
Finish and paint exterior and interior of buildings	50.0
Frame, sheath, roof buildings	50.0
Layout, fit, cut and thread pipe, install plumbing systems	50.0
Layout, cut, drill, machine braze, weld metal	50.0
Mix, pour, finish and cure concrete	50.0
Wire and install electrical fixtures and appliances	50.0
Read and interpret blueprints	50.0
Layout, cut, punch, bend, shape, solder, and rivet sheet metal	33.3
Mix mortar, lay bricks and blocks	33.3

FOREST PRODUCTS PRODUCTION

Table 12 shows, in rank order, percentages of respondents classified primarily as forest products producers who reported performance of tasks.

Table 12

NUMBERS AND PER CENTS OF FOREST PRODUCTS RESPONDENTS REPORTING PERFORMANCE OF TYPES OF TASKS, IN RANK ORDER

		Number	Percentage
1.	Manage a farm forest	5	100.0
2.	Prune and train trees or shrubs	4	80.0
3.	Plan land use	4	80.0
4.	Plan and conduct conservation programs	4	80.0
5.	Keep farm accounts	4	80.0
6.	Operate tractors	4	80.0
7.	Maintain and repair tractors, tractor engines	4	80.0
8.	Maintain and sharpen tools	4	80.0
9.	Plan schedules of production	3	60.0
10.	Transplant plants, shrubs or trees	3	60.0
11.	Harvest farm products	3	60.0
12.	Transport farm products	3	60.0
13.	Sell farm products	3	60.0
14.	Prepare farm income tax returns	3	60.0
15.	Plan farm work schedules	3	60.0
16.	Operate trucks	3	60.0
17.	Select building materials	3	60.0
18.	Frame, sheath, roof buildings	3	60.0
19.	Finish and paint exterior and interior of buildings	3	60.0
20.	Select plant varieties	2	40.0
21.	Prepare seed beds	2	40.0
22.	Fertilize crops, lawns, shrubs or trees	2	40.0
23.	Conduct varietal and cultural trails	2	40.0
24.	Identify and control weeds	2	40.0
25.	Prepare farm products for sale	2	40.0
26.	Store farm products	2	40.0
27.	Negotiate purchase of equipment	2	40.0
28.	Negotiate leases	2	40.0
29.	Supervise farm labor	2	40.0
30.	Decide upon market alternatives	2	40.0

		Number	Percentage
31.	Sell farm commodities or supplies	2	40.0
32.	Maintain and repair internal combustion engines	2	40.0
33.	Layout, cut, file, and thread pipe, install plumbing systems	2	40.0
34.	Layout, cut, drill, machine braze, weld metal	2	40.0
35.	Mix mortar, lay bricks and blocks	2	40.0
36.	Estimate repair or construction costs	2	40.0
37.	Order supplies and parts	2	40.0
38.	Build concrete forms	2	40.0
39.	Mix, pour, finish and cure concrete	2	40.0
40.	Care for animals during gestation and parturition	1	20.0
41.	Select homegrown feed	1	20.0
42.	Balance rations	1	20.0
43.	Store feed	1	20.0
44.	Pasture livestock	1	20.0
45.	Buy feed	1	20.0
46.	Recognize nutrient deficiencies	1	20.0
47.	Feed livestock or poultry	1	20.0
48.	Recognize, prevent, and control livestock or poultry diseases	1	20.0
49.	Identify, prevent and control livestock or poultry parasites	1	20.0
50.	Maintain and repair livestock or poultry housing equipment	1	20.0
51.	Handle and care for livestock or poultry	1	20.0
52.	Sell livestock or poultry products	1	20.0
53.	Identify economic plants and seeds	1	20.0
54.	Select seeds or nursery stock	1	20.0
55.	Root, graft or bud trees, plants or shrubs	1	20.0
56.	Rogue diseased and off-type plants	1	20.0
57.	Test and treat seeds	1	20.0
58.	Plant seeds and produce transplants	1	20.0
59.	Cultivate and mulch crops	1	20.0
60.	Pollinate crops or trees	1	20.0
61.	Ball and burlap plants, shrubs and trees	1	20.0
62.	Irrigate crops, lawns, trees or shrubs	1	20.0
63.	Identify and control insects	1	20.0
64.	Diagnose pesticide injury	1	20.0
65.	Diagnose and control disease	1	20.0
66.	Control rodents	1	20.0
67.	Classify soils	1	20.0
68.	Plan and conduct soil amendments	1	20.0
69.	Take a soil sample	1	20.0
70.	Mix potting soil	1	20.0

		Number	Percentage
71.	Measure and weigh farm products	1	20.0
72.	Cure, can or freeze farm products	1	20.0
73.	Organize a partnership, cooperative or corporation	1	20.0
74.	Hire farm labor	1	20.0
75.	Interpret market reports	1	20.0
76.	Buy farm commodities	1	20.0
77.	Maintain and repair electric motors	1	20.0
78.	Maintain and repair power transmission systems	1	20.0
79.	Maintain and repair hydraulic systems	1	20.0
80.	Maintain and repair trucks, truck engines	1	20.0
81.	Operate, maintain and repair tillage equipment	1	20.0
82.	Operate, maintain and repair forage harvest equipment	1	20.0
83.	Operate, maintain and repair planting equipment	1	20.0
84.	Wire and install electrical fixtures and appliances	1	20.0
85.	Maintain and repair shop machinery and equipment	1	20.0
86.	Layout, cut, punch, level, shape, solder, and rivet sheet metal	1	20.0
87.	Conduct breeding programs	0	0.0
88.	Improving breeding efficiency	0	0.0
89.	Artificially inseminate cattle	0	0.0
90.	Select livestock or poultry for breeding programs	0	0.0
91.	Buy livestock or poultry for slaughter	0	0.0
92.	Select livestock or poultry for production programs	0	0.0
93.	Mix feed	0	0.0
94.	Identify livestock or poultry	0	0.0
95.	Operate, maintain and repair livestock or poultry handling equipment	0	0.0
96.	Alter livestock or poultry	0	0.0
97.	Keep and use management records	0	0.0
98.	Milk cows and handle milk	0	0.0
99.	Groom or show livestock or poultry for sale	0	0.0
100.	Slaughter and dress livestock or poultry	0	0.0
101.	Test, weigh and grade livestock or poultry products	0	0.0
102.	Transport and store livestock or poultry products	0	0.0
103.	Market milk	0	0.0

		Number	Percentage
104.	Thin fruit	0	0.0
105.	Manage greenhouse crops	0	0.0
106.	Test soil and plant tissue	0	0.0
107.	Drain soils	0	0.0
108.	Grade farm products	0	0.0
109.	Display farm products	0	0.0
110.	Package and label farm products	0	0.0
111.	Install irrigation systems	0	0.0
112.	Terrace, level, shape land	0	0.0
113.	Layout and construct ponds and lagoons	0	0.0
114.	Install drainage systems	0	0.0
115.	Layout and construct contours	0	0.0
116.	Plan farm budgets	0	0.0
117.	Analyze farm accounts	0	0.0
118.	Maintain a farm business inventory	0	0.0
119.	Appraise farms	0	0.0
120.	Negotiate consumer credit	0	0.0
121.	Write a will	0	0.0
122.	Negotiate purchase of land	0	0.0
123.	Negotiate farm mortgages	0	0.0
124.	Negotiate production credit	0	0.0
125.	Plan farm insurance programs	0	0.0
126.	Operate, maintain and repair cultivation equipment	0	0.0
127.	Operate, maintain and repair special combine harvesters	0	0.0
128.	Operate, maintain and repair fertilizer equipment	0	0.0
129.	Operate, maintain and repair combine harvesters	0	0.0
130.	Operate, maintain and repair storage equipment	0	0.0
131.	Read and interpret blueprints	0	0.0
132.	Organize farm enterprises	0	0.0

Table 13 shows categories of tasks performed by respondents classified primarily as forest product producers. These data show that farmers engaged in forest products production have substantial need for capabilities required for performance of tasks involved in plant production, management, marketing and use and care of equipment. Major needs can be identified by examination of percentages shown on Table 12.

Table 13

CATEGORIES OF TASKS PERFORMED BY RANK ORDER PERCENTAGES OF RESPONDENTS PRODUCING FOREST PRODUCTS

	Percentage
ANIMAL CARE	
Livestock Breeding:	
Care for animals during gestation and parturition	20.0
Artificially inseminate cattle	0.0
Conduct breeding programs	0.0
Improving breeding efficiency	0.0
Livestock Selection:	
Buy livestock or poultry for slaughter	0.0
Select livestock or poultry for breeding programs	0.0
Select livestock or poultry for production programs	0.0
Livestock Nutrition:	
Balance rations	0.0
Buy feed	20.0
Feed livestock or poultry	20.0
Mix feed	0.0
Pasture livestock	20.0
Recognize nutrient deficiencies	20.0
Select homegrown feed	20.0
Store feed	20.0
Livestock Health and Sanitation:	
Identify, prevent, and control livestock and poultry parasites	20.0
Recognize, prevent, and control livestock and poultry diseases	20.0
Livestock Production Management:	
Handle and care for livestock or poultry	20.0
Maintain and repair livestock or poultry housing facilities	20.0
Alter livestock or poultry	0.0
Identify livestock or poultry	0.0
Keep and use management records	0.0
Milk cows and handle milk	0.0
Operate, maintain, and repair livestock or poultry handling equipment	0.0

	Percentage
Livestock Marketing:	
Sell livestock or poultry products	20.0
Groom and show livestock or poultry for sale	0.0
Market milk	0.0
Slaughter and dress livestock or poultry	0.0
Test, weigh and grade livestock or poultry products	0.0
Transport and store livestock or poultry products	0.0
PLANT PRODUCTION	
Plant Propagation:	
Select plant varieties	40.0
Identify economic plants and seeds	20.0
Rogue diseased and off-type plants	20.0
Root, graft or bud trees, plants or shrubs	20.0
Select seed or nursery stock	20.0
Test and treat seeds	20.0
Crop Production:	
Manage a farm forest	100.0
Prune and train trees or shrubs	80.0
Plan schedules of production	60.0
Transplant plants, shrubs or trees	60.0
Conduct varietal and cultural trails	40.0
Fertilize crops, lawns, shrubs or trees	40.0
Prepare seed beds	40.0
Ball and burlap plants, shrubs and trees	20.0
Cultivate and mulch crops	20.0
Irrigate crops, lawns, trees or shrubs	20.0
Plant seeds and produce transplants	20.0
Pollinate crops or trees	20.0
Thin fruit	0.0
Manage greenhouse crops	0.0
Plant Pests:	
Identify and control weeds	40.0
Control rodents	20.0
Diagnose and control diseases	20.0
Diagnose pesticide injury	20.0
Identify and control insects	20.0
LAND MANAGEMENT	
Plan and conduct conservation programs	80.0
Plan land use	80.0
Classify soils	20.0
Mix potting soil	20.0
Plan and conduct soil amendments	20.0

	Percentage
Take a soil sample	20.0
Drain soils	0.0
Test soil and plant tissue	0.0
Land Maintenance:	
Install drainage systems	0.0
Install irrigation systems	0.0
Layout and construct contours	0.0
Layout and construct ponds and lagoons	0.0
Terrace, level, shape land	0.0
HARVESTING AND PROCESSING	
Harvest farm products	60.0
Transport farm products	60.0
Sell farm products	60.0
Prepare farm products for sale	40.0
Store farm products	40.0
Cure, can or freeze farm products	20.0
Measure and weigh farm products	20.0
Display farm products	0.0
Grade farm products	0.0
Package and label farm products	0.0
GENERAL MANAGEMENT	
Farm Planning:	
Keep farm accounts	80.0
Analyze a farm account	0.0
Maintain a farm business inventory	0.0
Organize a farm enterprise	0.0
Plan farm budgets	0.0
Financial and Legal Protection:	
Prepare farm income tax returns	60.0
Negotiate leases	40.0
Negotiate purchase of equipment	0.0
Organize a partnership, cooperative or corporation	20.0
Appraise farms	0.0
Negotiate consumer credit	0.0
Negotiate farm mortgages	0.0
Negotiate purchase of land	0.0
Negotiate production credit	0.0
Plan farm insurance programs	0.0
Write a will	0.0

	Percentage
Farm Personnel Management:	
Plan farm work schedules	60.0
Supervise farm labor	40.0
Hire farm labor	20.0
MARKETING..	
Decide upon market alternatives	40.0
Sell farm commodities or supplies	40.0
Buy farm commodities	20.0
Interpret market report	20.0
USE AND CARE OF EQUIPMENT	
Farm Power:	
Maintain and repair tractors, tractor engines	80.0
Operate tractors	80.0
Operate trucks	60.0
Maintain and repair internal combustion engines	40.0
Maintain and repair electric motors	20.0
Maintain and repair hydraulic systems	20.0
Maintain and repair power transmission systems	20.0
Maintain and repair trucks, truck engines	20.0
Machinery:	
Operate, maintain and repair forage harvest equipment	20.0
Operate, maintain and repair planting equipment	20.0
Operate, maintain and repair tillage equipment	20.0
Operate, maintain and repair cultivation equipment	0.0
Operate, maintain and repair fertilizer equipment	0.0
Operate, maintain and repair grain combine harvesters	0.0
Operate, maintain and repair special combine harvesters	0.0
Operate, maintain and repair storage equipment	0.0
BUILDING MAINTENANCE AND CONSTRUCTION	
Maintain and sharpen tools	80.0
Finish and paint exterior and interior of buildings	60.0
Frame, sheath, roof buildings	60.0
Select building materials	60.0
Estimate repair or construction costs	40.0
Build concrete forms	40.0
Layout, fit, cut and thread pipe, install plumbing system	40.0
Layout, cut, drill, machine braze, weld metal	40.0

	Percentage
Mix mortar, lay bricks and blocks	40.0
Mix, pour, finish and cure concrete	40.0
Order supplies and parts	40.0
Layout, cut, punch, bend, shape, solder and rivet sheet metal	20.0
Maintain and repair shop machinery and equipment	20.0
Wire and install electrical fixtures and appliances	20.0
Read and interpret blueprints	0.0

HORTICULTURAL PRODUCTION

Table 14 shows, in rank order, percentages of respondents classified primarily as horticulture producers who reported performance of tasks.

Table 14

NUMBERS AND PER CENTS OF HORTICULTURE RESPONDENTS REPORTING PERFORMANCE OF TYPES OF TASKS, IN RANK ORDER

		Number	Percentage
1.	Supervise farm labor	44	97.7
2.	Harvest farm products	44	97.7
3.	Plan farm work schedules	43	95.5
4.	Hire farm labor	43	95.5
5.	Identify and control insects	42	93.2
6.	Negotiate purchase of equipment	42	93.2
7.	Operate tractors	42	93.2
8.	Operate trucks	42	93.2
9.	Operate, maintain and repair tillage equipment	41	90.9
10.	Transport farm products	40	88.6
11.	Fertilize crops, lawns, shrubs or trees	40	88.6
12.	Keep farm accounts	40	88.6
13.	Plan farm budgets	40	88.6
14.	Irrigate crops, lawns, trees or shrubs	39	86.4
15.	Identify and control weeds	39	86.4
16.	Sell farm products	39	86.4
17.	Maintain a farm business inventory	38	84.1
18.	Order supplies and parts	38	84.1
19.	Plan farm insurance programs	38	84.1
20.	Maintain and repair, tractors, tractor engines	38	84.1
21.	Interpret market reports	38	84.1
22.	Maintain and sharpen tools	38	84.1
23.	Plan schedules of production	37	81.8
24.	Diagnose and control diseases	36	79.5
25.	Operate, maintain and repair cultivation equipment	36	79.5
26.	Select building materials	36	79.5
27.	Plan land use	35	77.3
28.	Diagnose pesticide injury	35	77.3
29.	Control rodents	34	75.0
30.	Organize farm enterprises	34	75.0
31.	Sell farm commodities or supplies	34	75.0
32.	Layout, cut, fit and thread pipe, install plumbing systems	33	72.7
33.	Maintain and repair hydraulic systems	33	72.7
34.	Maintain and repair internal combustion engines	33	72.7

		Number	Percentage
35.	Analyze farm accounts	33	72.7
36.	Take a soil sample	33	72.7
37.	Negotiate production credit	33	72.7
38.	Prepare farm products for sale	33	72.7
39.	Install irrigation systems	33	72.7
40.	Decide upon market alternatives	32	70.5
41.	Maintain and repair shop machinery and equipment	32	70.5
42.	Cultivate and mulch crops	32	70.5
43.	Finish and paint exterior and interior of buildings	31	68.2
44.	Prepare farm income tax returns	31	68.2
45.	Maintain and repair trucks, truck engines	31	68.2
46.	Plan and conduct conservation programs	31	68.2
47.	Prune and train trees or shrubs	30	65.9
48.	Transplant plants, shrubs or trees	30	65.9
49.	Negotiate purchase of land	30	65.9
50.	Operate, maintain and repair fertilizer equipment	29	64.7
51.	Mix, pour, finish and cure concrete	28	63.3
52.	Select seeds or nursery stock	28	63.3
53.	Write a will	27	62.5
54.	Frame, sheath, roof buildings	27	62.5
55.	Grade farm products	27	62.5
56.	Store farm products	27	62.5
57.	Estimate repair or construction costs	27	62.5
58.	Measure and weigh farm products	27	62.5
59.	Operate, maintain and repair planting equipment	27	62.5
60.	Negotiate leases	27	62.5
61.	Buy farm commodities	26	61.4
62.	Negotiate farm mortgages	26	61.4
63.	Prepare seedbeds	26	61.4
64.	Drain soils	26	61.4
65.	Layout, cut, drill, machine braze, weld metal	26	61.4
66.	Install drainage systems	26	61.4
67.	Select plant varieties	26	61.4
68.	Identify economic plants and seeds	25	56.8
69.	Thin fruit	25	56.8
70.	Build concrete forms	24	52.3
71.	Rogue diseased and off-type plants	24	52.3
72.	Maintain and repair electric motors	22	47.7
73.	Root, graft, or bud trees, plants or shrubs	22	47.7
74.	Wire and install electrical fixtures and appliances	21	45.5
75.	Mix mortar, lay bricks and blocks	21	45.5

		Number	Percentage
76.	Conduct varietal and cultural trials	21	45.5
77.	Negotiate consumer credit	21	45.5
78.	Classify soils	21	45.5
79.	Terrace, level, shape land	20	43.2
80.	Cure, can or freeze farm products	20	43.2
81.	Read and interpret blueprints	19	40.9
82.	Appraise farms	19	40.9
83.	Organize a partnership, cooperative, or corporation	19	40.9
84.	Operate, maintain and repair storage equipment	19	40.9
85.	Package and label farm products	18	38.6
86.	Pollinate crops or trees	17	36.4
87.	Test soil and plant tissue	16	34.1
88.	Plan and conduct soil amendments	15	31.8
89.	Maintain and repair power transmission systems	13	27.3
90.	Test and treat seeds	12	25.0
91.	Display farm products	12	25.0
92.	Operate, maintain, and repair grain combine harvesters	12	25.0
93.	Handle and care for livestock or poultry	11	24.4
94.	Layout, cut, punch, bend, shape, solder and rivet sheet metal	11	24.4
95.	Recognize, prevent and control livestock and poultry diseases	11	24.4
96.	Operate, maintain and repair livestock or poultry handling equipment	10	22.2
97.	Pasture livestock	11	24.4
98.	Plant seeds and produce transplants	10	22.2
99.	Identify, prevent and control livestock and poultry parasites	10	22.2
100.	Operate, maintain and repair forage harvest equipment	9	20.0
101.	Maintain and repair livestock or poultry housing facilities	9	20.0
102.	Sell livestock or poultry products	9	20.0
103.	Feed livestock or poultry	8	17.8
104.	Layout, and construct ponds and lagoons	8	17.8
105.	Buy feed	8	17.8
106.	Store feed	8	17.8
107.	Select homegrown feed	8	17.8
108.	Operate, maintain and repair special combine harvesters	7	15.6
109.	Balance rations	7	15.6
110.	Keep and use management records	6	13.3
111.	Recognize nutrient deficiencies	6	13.3
112.	Ball and burlap plants, shrubs and trees	6	13.3

		Number	Percentage
113.	Layout and construct contours	6	13.3
114.	Mix feed	5	11.1
115.	Care for animals during gestation and parturition	5	11.1
116.	Select livestock or poultry for breeding programs	5	11.1
117.	Mix potting soil	5	11.1
118.	Transport and store livestock or poultry products	5	11.1
119.	Market milk	4	8.9
120.	Milk cows and handle milk	4	8.9
121.	Identify livestock or poultry	4	8.9
122.	Select livestock or poultry for production programs	4	8.9
123.	Improve breeding efficiency	4	8.9
124.	Conduct breeding programs	4	8.9
125.	Manage farm forests	4	8.9
126.	Buy livestock or poultry for slaughter	3	6.7
127.	Groom or show livestock or poultry for sale	3	6.7
128.	Alter livestock or poultry	2	4.4
129.	Slaughter and dress livestock or poultry	2	4.4
130.	Manage greenhouse crops	2	4.4
131.	Test, weigh and grade livestock or poultry products	1	2.2
132.	Artificially inseminate cattle	0	0.0

Table 15 shows categories of tasks performed by respondents classified primarily as horticulture producers.

These data show that farmers engaged in production of horticultural commodities have substantial need for abilities required for performance of tasks involved in plant production, management, marketing and equipment use and care. Major needs can be identified by examination of percentages shown on Table 14.

Table 15

CATEGORIES OF TASKS PERFORMED BY RANK ORDER
PERCENTAGES OF RESPONDENTS ENGAGED IN HORTICULTURAL PRODUCTION

	Percentage
ANIMAL CARE	
Livestock Breeding:	
Care for animals during gestation and parturition	11.1
Conduct breeding programs	8.9
Improve breeding efficiency	8.9
Artificially inseminate cattle	0.0
Livestock Selection:	
Select livestock or poultry for breeding programs	11.1
Select livestock or poultry for production programs	8.9
Buy livestock or poultry for slaughter	6.7
Livestock Nutrition:	
Pasture livestock	24.4
Buy feed	17.8
Feed livestock or poultry	17.8
Store feed	17.8
Select homegrown feed	17.8
Balance rations	15.6
Recognize nutrient deficiencies	13.3
Mix feed	11.1
Livestock, Health and Sanitation:	
Identify, prevent, and control livestock and poultry parasites	24.4
Recognize, prevent, and control livestock and poultry diseases	24.4

	Percentage
Livestock Production Management:	
Handle and care for livestock or poultry	24.4
Operate, maintain and repair livestock or poultry handling equipment	22.2
Market milk	8.9
Groom and show livestock or poultry	6.7
Slaughter and dress livestock or poultry	4.4
Test, weigh and grade livestock or poultry products	2.2
PLANT PRODUCTION	
Plant Propagation:	
Select seed or nursery stock	63.3
Select plant varieties	61.4
Identify economic plants and seeds	56.8
Rogue diseased and off-type plants	52.3
Root, graft or bud trees, plants or shrubs	47.7
Test and treat seeds	25.0
Crop Production:	
Fertilize crops, lawns, shrubs or trees	88.6
Irrigate crops, lawns, trees or shrubs	86.4
Plan schedules of production	81.8
Cultivate and mulch crops	70.5
Prune and train trees or shrubs	65.9
Transplant plants, shrubs or trees	65.9
Prepare seedbeds	61.4
Thin fruit	56.8
Conduct varietal and cultural trials	45.5
Pollinate crops or trees	36.4
Plant seeds and product transplants	22.2
Ball and burlap plants, shrubs and trees	13.3
Manage a farm forest	8.9
Manage greenhouse crops	4.4
Plant Pests:	
Identify and control insects	93.3
Identify and control weeds	86.4
Diagnose and control diseases	79.5
Diagnose pesticide injury	77.3
Control rodents	75.0
LAND MANAGEMENT	
Plan land use	77.3
Take a soil sample	72.7
Plan and conduct conservation programs	68.2
Drain soils	61.4
Classify soils	45.5
Test soil and plant tissue	34.1
Plan and conduct soil amendments	31.8
Mix potting soil	11.1

	Percentage
HARVESTING AND PROCESSING	
Harvest farm products	97.7
Transport farm products	88.6
Sell farm products	86.4
Prepare farm products for sale	72.7
Grade farm products	62.5
Store farm products	62.5
Measure and weigh farm products	62.5
Cure, can or freeze farm products	43.2
Package and label farm products	38.6
Display farm products	25.0
Land Maintenance:	
Install irrigation systems	72.7
Install drainage systems	61.4
Terrace, level, shape land	43.2
Layout and construct ponds and lagoons	17.8
Layout and construct contours	13.3
GENERAL MANAGEMENT	
Farm Planning:	
Keep farm accounts	88.6
Plan farm budgets	88.6
Maintain a farm business inventory	84.1
Organize farm enterprises	75.0
Analyze farm accounts	72.7
Financial and Legal Protection:	
Negotiate purchase of equipment	93.2
Plan farm insurance programs	84.1
Negotiate production credit	72.7
Prepare farm income tax returns	68.2
Negotiate purchase of land	65.9
Negotiate leases	62.5
Write a will	62.5
Negotiate farm mortgages	61.4
Negotiate consumer credit	45.5
Appraise farms	40.9
Organize a partnership, cooperative or corporation	40.9
Farm Personnel Management:	
Supervise farm labor	97.7
Hire farm labor	95.5
Plan farm work schedules	95.5
MARKETING	
Interpret market reports	84.1
Sell farm commodities or supplies	75.0
Decide upon market alternatives	70.5
Buy farm commodities	61.4

	Percentage
USE AND CARE OF EQUIPMENT	
Farm power:	
Operate tractors	93.2
Operate trucks	93.2
Maintain and repair tractors, tractor engines	84.1
Maintain and repair internal combustion engines	72.7
Maintain and repair hydraulic systems	72.7
Maintain and repair trucks, truck engines	68.2
Maintain and repair electric motors	47.7
Maintain and repair power transmission systems	27.3
Machinery:	
Operate, maintain and repair tillage equipment	90.9
Operate, maintain and repair cultivation equipment	79.5
Operate, maintain and repair fertilizer equipment	64.7
Operate, maintain and repair planting equipment	62.5
Operate, maintain and repair storage equipment	40.9
Operate, maintain and repair grain combine harvesters	25.0
Operate, maintain and repair forage harvest equipment	20.0
Operate, maintain and repair special combine harvesters	17.8
BUILDING MAINTENANCE AND REPAIR	
Maintain and sharpen tools	84.1
Order supplies and parts	84.1
Select building materials	79.5
Layout, fit, cut and thread pipe, install plumbing systems	72.7
Maintain and repair shop machinery and equipment	70.5
Finish and paint exterior and interior of buildings	68.2
Mix, pour, finish and cure concrete	63.3
Estimate repair or construction costs	62.5
Frame, sheath, roof buildings	62.5
Layout, cut, drill, machine braze, weld metal	61.4
Build concrete forms	52.3
Mix mortar, lay bricks and blocks	45.5
Wire and install electrical fixtures and appliances	45.5
Read and interpret blueprints	40.9
Layout, cut, punch, bend, shape, solder, and rivet sheet metal	24.4

GENERAL FARMING

Table 16 shows, in rank order, percentages of respondents classified as engaged in general farming who reported performance of tasks.

Table 16

NUMBERS AND PER CENTS OF GENERAL FARMING RESPONDENTS REPORTING PERFORMANCE OF TYPES OF TASKS, IN RANK ORDER

		Percentage
1.	Identify and control weeds	100.0
2.	Harvest farm products	100.0
3.	Sell farm products	100.0
4.	Plan farm work schedules	100.0
5.	Supervise farm labor	100.0
6.	Hire farm labor	100.0
7.	Operate tractors	100.0
8.	Operate, maintain and repair tillage equipment	100.0
9.	Cultivate and mulch crops	91.7
10.	Fertilize crops, lawns, shrubs or trees	91.7
11.	Irrigate crops, lawns, trees or shrubs	91.7
12.	Diagnose and control diseases	91.7
13.	Control rodents	91.7
14.	Take a soil sample	91.7
15.	Analyze farm accounts	91.7
16.	Keep farm accounts	91.7
17.	Negotiate purchase of equipment	91.7
18.	Decide upon market alternatives	91.7
19.	Sell farm commodities or supplies	91.7
20.	Interpret market reports	91.7
21.	Operate trucks	91.7
22.	Operate, maintain and repair cultivation equipment	91.7
23.	Operate, maintain and repair fertilizer equipment	91.7
24.	Maintain and sharpen tools	91.7
25.	Order supplies and parts	91.7
26.	Sell livestock or poultry products	83.3
27.	Prepare seedbeds	83.3
28.	Identify and control insects	83.3
29.	Plan land use	83.3
30.	Plan and conduct conservation programs	83.3
31.	Store farm products	83.3
32.	Transport farm products	83.3
33.	Plan farm budgets	83.3
34.	Maintain a farm business inventory	83.3
35.	Plan farm insurance programs	83.3

		Percentage
36.	Operate, maintain and repair planting equipment	83.3
37.	Select building materials	83.3
38.	Maintain and repair shop machinery and equipment	83.3
39.	Select homegrown feed	75.0
40.	Feed livestock or poultry	75.0
41.	Recognize, prevent and control livestock and poultry diseases	75.0
42.	Maintain and repair livestock or poultry housing facilities	75.0
43.	Plan schedules of production	75.0
44.	Measure and weigh farm products	75.0
45.	Organize farm enterprises	75.0
46.	Prepare farm income tax returns	75.0
47.	Write a will	75.0
48.	Maintain and repair tractors, tractor engines	75.0
49.	Maintain and repair trucks, truck engines	75.0
50.	Operate, maintain and repair forage harvest equipment	75.0
51.	Operate, maintain and repair storage equipment	75.0
52.	Pasture livestock	66.7
53.	Buy feed	66.7
54.	Identify, prevent and control livestock and poultry parasite	66.7
55.	Handle and care for livestock or poultry	66.7
56.	Identify livestock or poultry	66.7
57.	Operate, maintain and repair livestock or poultry handling equipment	66.7
58.	Negotiate purchase of land	66.7
59.	Maintain and repair internal combustion engines	66.7
60.	Maintain and repair hydraulic systems	66.7
61.	Frame, sheath, roof buildings	66.7
62.	Finish and paint exterior and interior of buildings	66.7
63.	Layout, cut, fit and thread pipe, install plumbing systems	66.7
64.	Layout, cut, drill, machine braze, weld metal	66.7
65.	Estimate repair or construction costs	66.7
66.	Build concrete forms	66.7
67.	Mix, pour, finish and cure concrete	66.7
68.	Balance rations	58.3
69.	Store feed	58.3
70.	Mix feed	58.3
71.	Alter livestock or poultry	58.3
72.	Prune and train trees or shrubs	58.3
73.	Diagnose pesticide injury	58.3
74.	Drain soils	58.3
75.	Prepare farm products for sale	58.3
76.	Install irrigation systems	58.3
77.	Terrace, level, shape land	58.3
78.	Negotiate farm mortgages	58.3

		Percentage
79.	Buy farm commodities	58.3
80.	Maintain and repair electric motors	50.0
81.	Operate, maintain and repair grain combine harvesters	50.0
82.	Rogue diseased and off-type plants	50.0
83.	Select plant varieties	50.0
84.	Transport and store livestock or poultry products	50.0
85.	Test, weigh and grade livestock or poultry products	50.0
86.	Recognize nutrient deficiency	50.0
87.	Select livestock or poultry for breeding programs	50.0
88.	Select livestock or poultry for production programs	50.0
89.	Care for animals during gestation and parturition	50.0
90.	Conduct breeding programs	50.0
91.	Improve breeding efficiency	41.7
92.	Keeping and use management records	41.7
93.	Identify economic plants and seeds	41.7
94.	Select seeds or nursery stock	41.7
95.	Test and treat seeds	41.7
96.	Classify soils	41.7
97.	Cure, can or freeze farm products	41.7
98.	Layout and construct ponds and lagoons	41.7
99.	Install drainage systems	41.7
100.	Negotiate leases	41.7
101.	Negotiate consumer credit	41.7
102.	Negotiate production credit	41.7
103.	Organize partnership, cooperative or corporation	41.7
104.	Maintain and repair power transmission systems	41.7
105.	Mix mortar, lay bricks and blocks	41.7
106.	Wire and install electrical fixtures and appliances	41.7
107.	Buy livestock or poultry for slaughter	33.3
108.	Transplant plants, shrubs or trees	33.3
109.	Thin fruit	33.3
110.	Test soil and plant tissues	33.3
111.	Grade farm products	33.3
112.	Appraise farms	33.3
113.	Layout, cut, punch, bend, shape, solder and rivet sheet metal	33.3
114.	Slaughter and dress poultry or livestock	25.0
115.	Plant seeds and produce transplants	25.0
116.	Pollinate crops or trees	25.0
117.	Display farm products	25.0
118.	Layout and construct contours	25.0
119.	Operate, maintain and repair special combine harvesters	25.0
120.	Read and interpret blueprints	25.0
121.	Artificially inseminate cattle	16.7
122.	Market milk	16.7
123.	Root, graft or bud trees, plants or shrubs	16.7

		Percentage
124.	Manage a farm forest	16.7
125.	Ball and burlap plants, shrubs and trees	16.7
126.	Conduct varietal and cultural trials	16.7
127.	Plan and conduct soil amendments	16.7
128.	Package and label farm products	16.7
129.	Milk cows and handle milk	8.3
130.	Groom or show livestock or poultry for sale	8.3
131.	Manage greenhouse crops	0.0
132.	Mix potting soil	0.0

Table 17 shows categories of tasks performed by respondents classified as engaged in general farming.

These data show that farmers engaged in general farming have substantial need for capabilities required for performance of tasks involved in animal care, plant production, management, marketing, and equipment use and care. Major needs can be identified by examination of percentages shown on Table 16.

Table 17

CATEGORIES OF TASKS PERFORMED BY RANK ORDER PERCENTAGES OF RESPONDENTS ENGAGED IN GENERAL FARMING

	Percentage
ANIMAL CARE	
Livestock Breeding:	
Care for animals during gestation and parturition	50.0
Conduct breeding programs	50.0
Improve breeding efficiency	41.7
Artificially inseminate cattle	16.7
Livestock Selection:	
Select livestock or poultry for breeding programs	50.0
Select livestock or poultry for production programs	50.0
Buy livestock or poultry for slaughter	33.3
Livestock Nutrition:	
Feed livestock or poultry	75.0
Select homegrown feed	75.0
Buy feed	66.7
Pasture livestock	66.7
Balance rations	58.3
Mix feed	58.3
Store feed	58.3
Recognize nutrient deficiencies	50.0

	Percentage
Livestock Health and Sanitation:	
Recognize, prevent and control livestock and poultry diseases	75.0
Identify, prevent, and control livestock and poultry parasites	66.7
Livestock Production Management:	
Maintain and repair livestock or poultry housing facilities	75.0
Handle and care for livestock or poultry	66.7
Identify livestock or poultry	66.7
Operate, maintain and repair livestock or poultry handling equipment	66.7
Alter livestock or poultry	58.3
Keep and use management records	41.7
Milk cows and handle milk	8.3
Livestock Marketing:	
Sell livestock or poultry products	83.3
Test, weigh and grade livestock or poultry products	50.0
Transport and store livestock or poultry products	50.0
Slaughter and dress livestock or poultry	25.0
Market milk	16.7
Groom and show livestock or poultry for sale	8.3

PLANT PRODUCTION

Plant Propagation:	
Rogue diseased and off-type plants	50.0
Select plant varieties	50.0
Identify economic plants and seeds	41.7
Select seed or nursery stock	41.7
Test and treat seeds	41.7
Root, graft or bud trees, plants, or shrubs	16.7
Crop Production:	
Cultivate and mulch crops	91.7
Fertilize crops, lawns, shrubs or trees	91.7
Irrigate crops, lawns, trees or shrubs	91.7
Prepare seedbeds	83.3
Plan schedules of production	75.0
Prune and train trees or shrubs	58.3
Transplant plants, shrubs or trees	33.3
Thin fruit	33.3
Plant seeds and produce transplants	25.0
Pollinate crops or trees	25.0
Ball and burlap plants, shrubs and trees	16.7

	Percentage
Conduct varietal and cultural trials	16.7
Manage a farm forest	16.7
Manage greenhouse crops	0.0
Plant Pests:	
Identify and control weeds	100.0
Control rodents	91.7
Diagnose and control diseases	91.7
Identify and control insects	83.3
Diagnose pesticide injury	58.3
LAND MANAGEMENT	
Take a soil sample	91.7
Plan and conduct conservation programs	83.3
Plan land use	83.3
Drain soils	58.3
Classify soils	41.7
Test soil and plant tissue	33.3
Plan and conduct soil amendments	16.7
Mix potting soil	0.0
Land Maintenance:	
Install irrigation systems	58.3
Terrace, level, shape land	58.3
Install drainage systems	41.7
Layout and construct ponds and lagoons	41.7
Layout and construct contours	25.0
GENERAL MANAGEMENT	
Farm Planning:	
Analyze farm accounts	91.7
Keep farm accounts	91.7
Maintain a farm business inventory	83.3
Plan farm budgets	83.3
Organize farm enterprises	75.0
Plan farm budgets	83.3
Financial and Legal Protection:	
Negotiate purchase of equipment	91.7
Plan farm insurance programs	83.3
Prepare farm income tax returns	75.0
Write a will	75.0
Negotiate purchase of land	66.7
Negotiate farm mortgages	58.3
Negotiate leases	41.7
Negotiate production credit	41.7

	Percentage
Organize a partnership, cooperative or a coporation	41.7
Negotiate consumer credit	41.7
Appraise farms	33.3
Farm Personnel Management:	
Hire farm labor	100.0
Plan farm work schedules	100.0
Supervise farm labor	100.0
HARVESTING AND PROCESSING	
Harvest farm products	100.0
Sell farm products	100.0
Store farm products	83.3
Transport farm products	83.3
Measure and weigh farm products	75.0
Prepare farm products for sale	66.7
Cure, can or freeze farm products	41.7
Display farm products	25.0
Grade farm products	33.3
Package and label farm products	16.7
MARKETING	
Decide upon market alternatives	91.7
Interpret market reports	91.7
Sell farm commodities or supplies	91.7
Buy farm commodities	58.3
USE AND CARE OF EQUIPMENT	
Farm Power:	
Operate tractors	100.0
Operate trucks	91.7
Maintain and repair tractors, tractor engines	75.0
Maintain and repair trucks, truck engines	75.0
Maintain and repair hydraulic systems	66.7
Maintain and repair internal combustion engines	66.7
Maintain and repair power transmission systems	41.7
Maintain and repair electric motors	50.0
Machinery:	
Operate, maintain and repair tillage equipment	100.0
Operate, maintain and repair cultivation equipment	91.7
Operate, maintain and repair fertilizer equipment	91.7
Operate, maintain and repair planting equipment	83.3
Operate, maintain and repair forage harvest equipment	75.0

	Percentage
Operate, maintain and repair storage equipment	75.0
Operate, maintain and repair grain combine harvesters	50.0
Operate, maintain and repair special combine harvesters	25.0
BUILDING MAINTENANCE AND CONSTRUCTION	
Maintain and sharpen tools	91.7
Order supplies and parts	91.7
Maintain and repair shop machinery and equipment	83.3
Select building materials	83.3
Finish and paint exterior and interior of buildings	66.7
Frame, sheath, roof buildings	66.7
Layout, cut, drill, machine braze, weld metal	66.7
Layout, fit, cut and thread pipe, install plumbing systems	66.7
Estimate repair or construction costs	66.7
Build concrete forms	66.7
Mix, pour, finish and cure concrete	66.7
Mix mortar, lay bricks and blocks	41.7
Wire and install electrical fixtures and appliances	41.7
Layout, cut, punch, bend, shape, solder and rivet sheet metal	33.3
Read and interpret blueprints	25.0

CONCLUSIONS

The traditional vocational agriculture production curriculum has always contained the three basic elements of: Animal Industry, Plant Industry, and Agricultural Mechanization and Farm Management. In recent years, the Farm Management has received increased emphasis. The results of this study help clarify the need for such developments. This study also suggests some need for further expansion and upgrading of traditional programs within each of the traditional areas of their curriculum, so as to keep pace with modern-day farming practices.

Agricultural curriculum development has traditionally been based upon local needs and constant study of farming by the Vocational Agriculture teacher. It is hoped that this study will be useful to the state curriculum builder and to the local teacher.

Information provided by this study can be used as a general guide for people responsible for developing curriculum guides for the state of Washington.

This study indicates the need to keep our high school programs rather broad in order to encompass the breadth and complexity of agricultural production and agri-business.

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APPENDIX A

The Following General Information
Would Be Very Useful in This Study

In questions 1 - 4, please fill in the blank with the necessary information.

1. Name _____
2. Present Job Title _____
3. Name of Employing Firm _____
4. Address of Employing Firm _____

In questions 5 - 6 check (✓) all the answers that apply to you.

5. In which area do you work?
   - _____ 1. Building Trades
   - _____ 2. Electronics
   - _____ 3. Child care
   - _____ 4. Food service
   - _____ 5. Retail sales
   - _____ 6. Office
   - _____ 7. Agriculture

6. Where did you receive your specialized occupational training?
   - _____ 1. On the job (not apprentice)
   - _____ 2. Apprentice
   - _____ 3. Military
   - _____ 4. Business College
   - _____ 5. Trade or technical school
   - _____ 6. Correspondence
   - _____ 7. Specialized school (for example: IBM Key Punch School, Heavy Equipment School)
   - _____ 8. High School
   - _____ 9. Junior College
   - _____ 10. Self-taught
   - _____ 11. Other (please list)
     _____
     _____
     _____
     _____

In questions 7 - 11 please circle the one answer which applies.

7. What was the highest grade of school you completed?
   8 or less, 9, 10, 11, 12, 13, 14, 15, 16 or more

8. Sex? Male Female

9. Age
   Under 20 20-30 31-50 Over 50

10. For how many years have you been in your present occupation?
    Less than 1 year 1-5 years More than 5 years

11. How many times have you changed occupations in the past 5 years? (For example: plumber to sheet metal worker to retail sales = 2 changes)
    0 times
    1 - 2 times
    3 or more times

INSTRUCTIONS

On the following pages is a list of tasks (activities).

Read <u>each</u> task listed.

If you have <u>actually performed</u> the task during the past two years, check (✓) the blank under "YES" which appears to the left of the item.

If you have not performed the task in the last two years, check (✓) the blank under "NO" to the left of the item.

DO NOT CHECK "YES" UNLESS YOU HAVE ACTUALLY PERFORMED THIS TASK IN THE LAST TWO (2) YEARS.

MAKE CERTAIN THAT YOU CHECK EACH ITEM EITHER "YES" OR "NO."

An example may be helpful to you:

YES	NO	
✓		Type letters (A check of "yes" indicates you have typed letters as part of your occupation in the past couple of years.)
	✓	Drive a truck (A check of "no" indicates you have not driven a truck as part of your occupation in the past couple of years, <u>even though you may be able to do it</u>.)

If you have performed these tasks in your occupation in the past couple of years, check (✓) yes; otherwise, no.

ANIMAL INDUSTRY

YES	NO	Livestock Breeding:
___	___	Conduct breeding programs
___	___	Artificially inseminate cattle
___	___	Improving breeding efficiency
___	___	Care for animals during gestation and parturition

Please list other major tasks which you have performed in the livestock breeding area:

_____

_____

_____

YES	NO	Livestock Selection:
___	___	Select livestock or poultry for breeding programs
___	___	Select livestock or poultry for production programs
___	___	Buy livestock or poultry for slaughter

Please list any other major tasks which you have performed in the livestock selection area:

_____

_____

_____

Livestock Nutrition:

YES	NO	
___	___	Select homegrown feed
___	___	Store feed
___	___	Buy feed
___	___	Recognize nutrient deficiencies
___	___	Balance rations
___	___	Pasture livestock
___	___	Mix feed
___	___	Feed livestock or poultry

List other major tasks which you have performed in the livestock nutrition area:

_____

_____

_____

Livestock Health and Sanitation

YES	NO	
___	___	Recognize, prevent, and control livestock and poultry diseases
___	___	Identify, prevent, and control livestock and poultry parasites

Please list any other major types of health and sanitation tasks you perform in your occupation:

_____

_____

_____

Livestock Production Management:

YES	NO	
___	___	Maintain and repair livestock or poultry housing facilities
___	___	Identify livestock or poultry
___	___	Alter livestock or poultry
___	___	Keep and use management records
___	___	Milk cows and handle milk
___	___	Handle and care for livestock or poultry
___	___	Operate, maintain, and repair livestock or poultry handling equipment

Please list any other major types of production management tasks you perform in your occupation:

_____

_____

_____

Livestock Marketing:

YES	NO	
___	___	Groom and show livestock or poultry for sale
___	___	Sell livestock or poultry products
___	___	Transport and store livestock or poultry products
___	___	Slaughter and dress livestock or poultry
___	___	Test, weigh, and grade livestock or poultry products
___	___	Market milk

Please list any other major types of marketing tasks you perform in your occupation:

_____

_____

_____

PLANT INDUSTRY

Plant Propagation:

YES	NO	
___	___	Identify economic plants and seeds
___	___	Root, graft, or bud trees, plants, or shrubs
___	___	Rogue diseased and off-type plants
___	___	Select seed or nursery stock
___	___	Select plant varieties
___	___	Test and treat seeds

Please list any other major types of plant propagation tasks you perform in your occupation:

_____

_____

_____

Crop Production:

YES	NO	
___	___	Plan schedules of production
___	___	Transplant plants, shrubs, or trees
___	___	Pollinate crops or trees
___	___	Manage a farm forest
___	___	Ball and burlap plants, shrubs, and trees
___	___	Irrigate crops, lawns, trees, or shrubs
___	___	Manage greenhouse crops
___	___	Plant seeds and produce transplants
___	___	Cultivate and mulch crops
___	___	Thin fruit
___	___	Prepare seedbeds
___	___	Fertilize crops, lawns, shrubs, or trees
___	___	Prune and train trees or shrubs
___	___	Conduct varietal and cultural trials

Please list any other major types of crop production tasks you perform in your occupation:

_____

_____

_____

Plant Pests:

YES	NO	
___	___	Identify and control insects
___	___	Diagnose pesticide injury
___	___	Control rodents
___	___	Identify and control weeds
___	___	Diagnose and control diseases

Please list any other major types of plant pest tasks you perform in your occupation:

_____

_____

_____

Soils:

YES	NO	
___	___	Classify soils
___	___	Plan land use
___	___	Take a soil sample
___	___	Plan and conduct conservation programs
___	___	Test soil and plant tissue
___	___	Plan and conduct soil amendments
___	___	Mix potting soil
___	___	Drain soils

Please list any other major types of soil tasks you perform in your occupation:

_____

_____

_____

Harvest, Process, Market:

YES	NO	
___	___	Harvest farm products
___	___	Prepare farm products for sale
___	___	Display farm products
___	___	Cure, can or freeze farm products
___	___	Transport farm products
___	___	Grade farm products
___	___	Store farm products
___	___	Measure and weigh farm products
___	___	Package and label farm products
___	___	Sell farm products

Please list any other major types of harvest, process, market tasks you perform in your occupation:

_____

_____

_____

FARM MANAGEMENT AND MARKETING

Farm Planning:

YES	NO	
___	___	Organize farm enterprises
___	___	Analyze farm accounts
___	___	Keep farm accounts
___	___	Plan farm budgets
___	___	Maintain a farm business inventory

Please list any other major types of farm planning tasks you perform in your occupation:

_____

_____

_____

Financial and Legal Protection:

YES	NO	
___	___	Appraise farms
___	___	Negotiate leases
___	___	Prepare farm income tax returns
___	___	Negotiate purchase of land
___	___	Negotiate production credit
___	___	Plan farm insurance programs
___	___	Negotiate purchase of equipment
___	___	Negotiate consumer credit
___	___	Write a will
___	___	Negotiate farm mortgages
___	___	Organize a partnership, cooperative, or corporation

Please list any other major types of financial and legal tasks you perform in your occupation:

_____

_____

_____

Farm Personnel Management:

YES	NO	
___	___	Plan farm work schedules
___	___	Hire farm labor
___	___	Supervise farm labor

Please list any other major types of personnel management tasks you perform in your occupation:

_____

_____

_____

Marketing:

YES	NO	
___	___	Decide upon market alternatives
___	___	Interpret market report
___	___	Sell farm commodities or supplies
___	___	Buy farm commodities

Please list any other major types of marketing tasks you perform in your occupation:

_____

_____

_____

AGRICULTURAL MECHANIZATION AND AUTOMATION

Farm Power:

YES	NO	
___	___	Operate tractors
___	___	Maintain and repair internal combustion engines
___	___	Maintain and repair tractors, tractor engines
___	___	Maintain and repair hydraulic systems
___	___	Operate trucks
___	___	Maintain and repair electric motors
___	___	Maintain and repair power transmission systems
___	___	Maintain and repair trucks, truck engines

Please list any other major types of farm power tasks you perform in your occupation:

_____

_____

_____

Farm Machinery:

YES	NO	
___	___	Operate, maintain and repair tillage equipment
___	___	Operate, maintain and repair forage harvest equipment
___	___	Operate, maintain and repair planting equipment
___	___	Operate, maintain and repair grain combine harvesters
___	___	Operate, maintain and repair cultivation equipment
___	___	Operate, maintain and repair special combine harvesters
___	___	Operate, maintain and repair fertilizer equipment
___	___	Operate, maintain and repair storage equipment

Please list any other major types of farm machinery tasks you performed in your occupation:

_____

_____

_____

Maintenance, Repair and Construction:

YES	NO	
___	___	Read and interpret blueprints
___	___	Maintain and sharpen tools
___	___	Finish and paint exterior and interior of buildings
___	___	Lay out, cut, drill, machine braze, weld metal
___	___	Select building materials
___	___	Frame, sheath, roof buildings
___	___	Lay out, fit, cut and thread pipe, install plumbing systems
___	___	Mix mortar, lay bricks and blocks
___	___	Estimate repair or construction costs
___	___	Wire and install electrical fixtures and appliances
___	___	Build concrete forms
___	___	Mix, pour, finish and cure concrete
___	___	Order supplies and parts
___	___	Maintain and repair shop machinery and equipment
___	___	Layout, cut, punch, bend, shape, solder and rivet sheet metal

Please list any other major types of maintenance, repair and construction tasks you perform in your occupation:

_____

_____

_____

Soil Structures:

YES	NO	
___	___	Install irrigation systems
___	___	Layout and construct ponds and lagoons
___	___	Terrace, level, shape land
___	___	Install drainage systems
___	___	Layout and construct contours

Please list any other major types of soil structures tasks you perform in your occupation:

_____

_____

_____

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600
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604 Forestry — Soil Management
605 Dairy Production — Farm Marketing
606

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ABSTRACT

800
801 The objective of this study was to obtain up-to-date facts about clusters of
802 tasks performed by Washington State farm operators engaged primarily in pro-
803 duction of (1) grain, (2) livestock, (3) dairy commodities, (4) poultry, (5)
804 forest products, (6) horticultural commodities, and (7) general farming.
805 Populations representing those categories were identified. A random sample
806 of 267 farmers was drawn. A questionnaire was designed to ascertain farmer's
807 performance of tasks classified as (1) animal care, (2) plant production,
808 (3) land management, (4) harvesting and processing, (5) general management,
809 (6) marketing, (7) equipment use and care, and (8) building maintenance and
810 construction. It was distributed by mail and 178 usable questionnaires were
811 returned. Results show that tasks classified as management, marketing,
812 animal care, plant production are performed by large percentages of all
813 categories of farm operators.
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